THE IMPACT OF THE ASIAN FINANCIAL CRISIS 1997 ON THE HANG SENG INDEX CONSTITUENTS STOCKS, IN TERMS OF COMPANIES' EARNINGS YIELD, P/E RATIO AND MARKET-TO-BOOK RATIO

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ABSTRACT

This research project is an event study, which takes October 27, 1997 as the event day to investigate the impact of the crisis to individual stocks. Another objective is to examine which industries were mostly affected by the Asian Financial Crisis, 1997 by analyzing the performance of the 33 Hang Seng Index Constituents Stocks between 1995 and 1998 and the reasons why those industries are badly suffered from the crisis.

Four categories of these stocks are identified as usual practice and their P/E ratios, earnings attributed to shareholders, market-to-book ratios as well as share price are chosen as fundamental variables. The analysis is carried out based on two levels: category level and individual stock level. T-tests, regression analysis and cumulative residual analysis are conducted in addition to the CAPM analysis.

Results from empirical analysis present the fact that some companies have an improved performance after the crisis because of individual business policies that resist the adverse effect of the crisis. Other companies, on the contrary, perform badly from which is positively related to the crisis.

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CHAPTER I

INTRODUCTION

"When there's smoke, there's fire." After 3 decades of whirlwind growth, many of Asian Tigers are in the doldrums. Plunging currencies and stock markets have put the economic miracle in the deep freeze, and minds are now concentrated simply on survival. More firms and banks go bust and unemployment and inflation rise[1]. Reforms in economic policies and political compromise with people have pacified the socio-economic unrest. After one and a half-year, currencies have steadied and stock markets have been recovering. The crisis might seem to be over. However, it has barely begun.

An early sign of trouble brewing in Asian economies was the mid-1996 collapse of Bangkok Bank of Commerce. Then, in early February 1997 Somprasong Land became the first real estate company to default on a Euro-bond. Also in February, Finance One, Thailand's largest finance company, indicated it was in trouble by seeking a merger with a commercial bank. In fact, the causes of the crisis are the Asian countries' heavy debt, poor governance and greed.

Thailand's total external debt - public and private – rose from 38.3% of GDP in 1990 to 50.9% GDP in 1996. According to IMF estimate, by the end of 1996,

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[1] Woodall, Pam. "Survey: East Asian Economies: Tiger Adrift." Economist, 346 (March 7, 1998), p. S3-S5

European banks had lent $318 billion, and their Japanese and American counterparts $260 billion and $46 billion, respectively, in the form of short-term loans. The highest international lending went to South Korea ($100 billion), followed by Thailand ($70.2 billion), Indonesia ($55.5 billion), China ($55 billion), Taiwan ($2.4 billion) and Malaysia ($22.2 billion). The Asia market has legendarily been so attractive that foreign banks frequently lent blindly, even if they have doubts they do not stop lending[2].

Poor governance is another factor, which leads to the crisis. On the one hand, governments believed it was their birthright to have 8% growth. The high optimism about the region was followed by the massive inflows. On the other hand, people's loss of confidence of the countries after crisis led to rushing to get their money out of the banks. Therefore, banks in Asia experienced the massive outflows. The cozy relationship between the government and the business conglomerates led to corruption and sapped entrepreneurial creativity growth. Many megaprojects were supported by the government and were financed by short-term debt.

The problems arose in the Asian region of which have undoubtedly caused an adverse effect on Hong Kong. The purpose of this paper is to examine which industries were mostly affected by the crisis by analyzing the performance of the Hang Seng Index Constituents Stocks between 1995 and 1998 and the reasons why those industries are badly suffered from the crisis.

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[2] Biers, Dan. Crash of '97. Hong Kong: Far Eastern Economic Review, 1998

CHAPTER II

LITERATURE REVIEW

To investigate the impact of the Asian Financial Crisis on Hong Kong stock market, analysts may focus on market information like stock price, company earnings, P/E ratio and so on to get a clear picture about the magnitude of the crisis. Not until the crisis broke out in October of 1997, no one knew that Asian stock markets would fall like dominos. To consider that event into an in-depth study, event study is used to examine how the security prices reflect all currently available information as well as the price changes that reflect new information.

An event study describes a technique of empirical financial research that enables an observer to assess the impact of a particular event on a firm's stock price[3]. In addition to the firm-specific information like dividend announcement, stock prices respond to a wide range of economic news such as updated forecasts for GDP, inflation rates, interest rates, or corporate earnings. Around the date of the out-break of the financial crisis, stock market even had to cope with anticipation and responses from analysts, investors, regulatory bodies as well as individual firms. To have a clearer concept of how the Asian Financial Crisis has affected Hong Kong stock market, past crisis theories as well as the analysis of the roots of the crisis are thence reviewed.

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[3] Bodie, Zvi (et al). Investments. 3rd ed. Chicago: Irwin, 1996, p. 351

Roots of Asian Financial Crisis

According to Corsetti (1998)[4], some analysts believed that sudden shifts in market expectations and confidence were the key sources of the initial financial turmoil, its propagation over time and regional contagion.

Panic on the part of domestic and international investors, were somewhat reinforced by the faulty policy response of the International Monetary Fund (IMF) and the international financial community

According to the other view – presented in his paper – the crisis reflected structural and policy distortions in the countries of the region. Fundamental imbalances triggered the currency and financial crisis in 1997, even if once the crisis started, market overreaction and herding caused the plunge of exchange rates, asset prices and economic activity to be more severe than warranted by the initial weak economic conditions

Macroeconomic imbalances in these countries were assessed within a broad overview of structural factors:

- Current account deficits and foreign indebtedness,
- Growth and inflation rates,
- Savings and investment ratios,
- Budget deficits,
- Real exchange rates,
- Foreign reserves,
- Corporate sector investment,
- Measures of debt and profitability,
- Indexes of excessive bank lending,
- Indicators of credit growth and financial fragility,

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[4] Corsetti, G. (et al). What Caused the Asian Currency and Financial Crisis? Part I – A Macroeconomic Overview. Internet

- Monetary stances,
- Debt-service ratios,
- Dynamic composition of capital inflows and outflows,
- Political instability.

In the context of inadequacies and close links between public and private institutions found the roots of the Asian crisis. The moral hazard problem in Asia magnified the financial vulnerability of the region. Moral hazard generally arises when someone can reap the rewards from one's actions when things go well but does not suffer the full consequences when things go bad. Those investment banks might have the expectation that monetary authorities or international financial institutions would come to rescue of failing financial systems and unsound investments has clearly engendered a significant element of moral hazard and excessive risk-taking. The dividing line between public and private liabilities, too often, becomes blurred[5].

At the corporate level, political pressures to maintain high rates of economic growth had led to a long tradition of public guarantees to private projects, some of which were effectively undertaken under government control, directly subsidized, or supported by policies of direct credit to favored firms and industries. With a widespread business sector network of personal and political favoritism, and with governments that appeared willing to intervene in favor of troubled firms, markets operated under the impression that the return investment was somewhat "insured" against adverse shocks. This may also give rise to the mentality of excessive risk-taking.

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[5] Greenspan, Alan. "Statements to the Congress – January 30, 1998." Federal Reserve Bulletin. 84 (March 1998): 3. P. 186-190

With undercapitalized economies accompanied with good investment opportunities, investment rates and capital inflow in Asia remained high even after the negative signals sent by the indicators of profitability. Moreover, the crucial factor underlying the sustained the investment rates was the financial side of the moral hazard problem in Asia, leading national banks to borrow excessively from abroad and lend excessively at home.

The extensive liberalization of capital markets was consistent with the policy goal of providing a large supply of the low-costs funds to national financial institutions and the domestic corporate sector. The same goal of liberalization also motivated the exchange rate policies aimed at reducing the volatility of the domestic currency in terms of the US dollar, thus lowering the risk premium of the dollar-denominated debt.

In particular, the long period of stagnation of the Japanese economy in the 1990s led to a significant export slowdown from the Asian countries. The sharp appreciation of the US dollar relative to the Japanese yen and the European currencies since the second half of 1995 led to deteriorating cost-competitiveness in most Asian countries whose currencies were effectively pegged to the dollar.

As a result of the cumulative effects of the financial and real imbalances considered above, by 1997 the Asian countries appeared quite vulnerable to financial crisis, either related to sudden switches in market confidence and sentiment, or driven by deteriorating expectations about the poor state of fundamentals. In 1997, the drop of the real estate and stock markets – where sustained speculative trends were in part fueled by foreign capital inflows – led to the emergence of wide losses and outright defaults in the corporate and financial sectors. Policy uncertainty stemming from the lack of commitment to structural reforms by the

domestic authorities worsened the overall climate.

Moreover, property-price booms in Asian emerging economies have tended to be more pronounced than those in larger industrial countries.

TABLE 1

ESTIMATES OF THE SHARE OF BANK LENDING TO

THE PROPERTY SECTOR

	End-1997 (%)
Hong Kong	**40-55**
Singapore	30-40
Thailand	30-40
Malaysia	30-40
Indonesia	25-30
Korea, South	15-25
Philippines	15-20

Source: Goldstein, Morris. The Asian Financial Crisis: Causes, Cures, and Systemic Implications. Washington DC: Institute for International Economics

The quality of investment in these countries was less impressive than the quantity. Much of private investment was directed toward either speculative activities (e.g. real estates) or industries where over-capacity was likely to be a problem over the medium term, and when too much public investment was directed toward either over-ambitious infrastructure projects or inefficient government monopolies.

This over-extension and concentration of credit left the ASEAN-4 economies vulnerable to a shift in credit and cyclical conditions. When that shift came, induced

initially by the need to control overheating and later on by an export slowdown and by an effort to defend exchange rates with high interest rates against strong market pressures, it brought with it, *inter alia*, falling property prices and a rising share of non-performing bank loans[6].

Private-sector estimates of peak and actual non-performing bank loans point to extreme banking difficulties. The liquidity and currency mismatches eventually took their toll – in motivating speculative attacks, in magnifying the consequences of subsequent exchange rate changes, and in limiting the authorities' room for maneuver in crisis management.

The behavior of real effective exchange rates over the past two years or so pointed to deterioration in competitiveness in much of emerging Asia.

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[6] Goldstein, Morris. The Asian Financial Crisis: Causes, Cures, and Systemic Implications. Washington DC: Institute for International Economics

TABLE 2

EXTERNAL SECTOR PROBLEMS

	Real effective exchange rate overvaluation in percentage (versus June 1987 to May 1997 average)	**Current account balance (percentage of GDP)**		**Merchandise exports (annual percentage growth)**	
	June 1997	**1995**	**1996**	**1995**	**1996**
Thailand	6.7	-7.9	-7.9	23.1	0.5
Indonesia	4.2	-3.3	-3.3	13.4	9.7
Malaysia	9.3	-10.0	-4.9	20.3	6.5
Philippines	11.9	-4.4	-4.7	28.7	18.7
Hong Kong	**22.0**	**-3.9**	**-1.3**	**14.8**	**4.0**
Singapore	13.5	16.8	15.7	13.7	5.3
South Korea	-7.6	-2.0	-4.9	30.3	3.7
Taiwan	-5.5	2.1	4.0	20.0	3.8

Source: Goldstein, Morris. The Asian Financial Crisis: Causes, Cures, and Systemic Implications. Washington DC: Institute for International Economics

Another concern was the competition faced by the ASEAN-4 economies from China. More specifically, some analysts perceived a shift in regional comparative advantage toward China and away from the ASEAN-4 economies.

Looking down the road for 1998 and 1999, some observers may well have seen (in 1997) the sustainability of Asian external deficits threatened by overproduction in certain industries and by intense export competition among countries. US may well seem to absorb a healthy share of emerging Asia's exports. But the United States was on its way to a current account deficit in 1997 of almost $170 billion.

Generally, the external factors are summed to counter and contain Asia, the

expected-to-be future of the world's economy, from growing and they also prepared the run-up of the crisis constituted a second element of vulnerability.

Contagion Phenomenon

According to the Wake-up call hypothesis of Goldstein (1998), most market indicators of risk, private creditors and rating agencies were asleep prior to the outbreak of the Thai crisis. Thereafter, one country after another in a region undergoes depreciation of its currency, the countries that have not devalued experienced a deterioration in competitiveness, which in turn makes their currencies more susceptible to speculative attacks. Asian emerging economies have important trade links to one another, and they also compete in third-country markets. The mechanism also explains why questions are raised about whether China will eventually be pressured to devalue so as to offset the decline incompetitveness linked to the depreciation of the Asian-crisis countries. Taiwan did not defend its currency forcefully enough in October 1997 and thus its devaluation added unduly pressure on Hong Kong.

Fixed Exchange Rate Regime

Another structural feature of Asian economies is the fixed exchange rate regime. Under fixed exchange rates and perfect capital mobility, the central bank has no control on the money supply. This is because central bank may make use of the reserve to maintain the fixed exchange rate. Once the peg is over-valued, central bank has to sell local dollars to stabilize the rate and vice versa. This may handicap the ability of controlling money supply thanks to the free operation of the market, which adjusts demand and supply on its own. Perfect capital mobility

makes the central bank more vulnerable of the market operation since speculators may wait for the opportunities of spotting mispriced local currencies and have speculation activities accordingly. Hence, there is no monetary autonomy: the central bank has no independent power to set the money supply and the domestic interest rate. An extreme form of a fixed exchange rate regime is a "currency board', which is currently adopted by Hong Kong Monetary Authority.

Another shock that might occur in a regime of fixed exchange rates is a change in expectations that leads to an expected future depreciation of a fixed exchange rate. In spite of the current fixity of the exchange rate, changes in the expectations about the future value of the exchange rate might occur even in a regime of fixed exchange rates (that is not fully credible). Such changes in expectations may be due to goods reasons such as changes in fundamental variables (high domestic inflation, large budget deficits, political risks and so on) or might, at times, also be caused by "irrational" changes in the investors' sentiments.

Self-fulfilling changes in expectations may lead investors to believe that a fixed parity will collapse and this will lead them to a speculative attack on a currency that has a fixed parity, even if there has been no change in the underlying fundamental determinants of exchange rates (Roubini, 1998)[7].

Either the central bank intervenes to defend the currency at the time when the change in expectations occurs and this intervention leads to a fall in the money supply; or, equivalently, the central bank performs an open market sale of government bonds that reduces the liquidity in the economy.

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[7] Roubini, Nouriel. "Part 5. Money, Interest Rates and Exchange Rates. The Collapse of Fixed Exchange Rate Regimes. The Asian Currency Crisis of 1997." An Introduction to Open Economy Macroeconomics, Currency Crises and the Asian Crisis. Internet

Sterilized and Non-sterilized Foreign Exchange Rate

There are two ways to adjust the pressure of defending the currency by the Central bank. Usually, the Central bank sells foreign reserves to the public and this leads to a reduction in the money supply and an increase in domestic interest rates. This is formally called "non-sterilized intervention" since the Central bank allows the intervention to affect the equilibrium level of the money supply in the domestic economy.

There is another type of forex intervention that takes the name of "sterilized intervention". This is that, after central bank intervenes in the forex market, the money supply is brought back to its previous level via an open market purchases of domestic bonds. Such sterilization policies, however, have the negative consequences; in times when the domestic currency is subject to devaluation pressures, sterilized intervention do not allow the intervention to increase the domestic interest rate. Therefore, sterilized interventions do not eliminate the original cause for a pressure on the exchange rate.

When the currency is subject to devaluation pressures and the central bank is trying to maintain the fixed exchange rate, the only way to defend the currency is to perform non-sterilized interventions that reduce the money supply and increase interest rats so that the incentive to dump domestic assets is eliminated.

The reasons for the observed collapse of fixed rate regimes is that the exchange rate is often fixed at a parity that is not consistent with the fundamentals.

Many analysts like to compare the peso crisis of Mexico in 1982 to the attack on the Asian currencies in the crisis. From the historical lesson, they want to predict what would happen to Asian countries in similar situations. Hence, many of them like Roubini made a case study of Mexico peso crisis in 1982 to examine the

possible impact.

Case Study of Fixed Exchange Rate Collapse: Mexico Peso Crisis, 1982

The short story is that the peso collapsed in 1982. Between early 1977 and early 1980, the peso traded in the neighborhood of 23 pesos per dollar, a level enforced by the Banco de Mexico, the Mexican central bank. Through January of 1982, the rate crept up, hitting 26.6 the end of the month. On February 5, President Lopez-Portillo announced that the central bank would defend the peso "like a dog," presumably to assure financial markets that the government would not let the peso collapse. On February 19 this effort was abandoned, and the peso immediately fell 29 percent against the dollar, reaching 45 pesos to the dollar by the end of the month. The peso continued to fall throughout the decade, and was trading at about 3000 to the dollar by the early 1990s.

The most obvious one is that Mexico's fixed exchange rate was inconsistent with its other policies. The reason for this excessive increase in the Mexican money supply was the existence of large budget deficits in Mexico that were being financed by the central bank purchases of government debt; these purchases, in turn, led to excessive creation of money supply.

As a result of the monetary financing of its budget deficit, prices in Mexico rose more rapidly than those in the US, with Mexico averaging between 20 and 30 percent inflation between 1979 and 1981. By February 1982, the discrepancy in prices proved to be indefensible, and the peso imploded. In short, the enormous departure from PPP was too much for the system to withstand, so the exchange rate collapsed.

El Banco tried to set the exchange rate at a level that was wildly inconsistent

with the fundamental PPP value and with the monetary financing of budget deficits. When this didn't work, they let the peso fall and limited foreign exchange transactions.

As the real appreciation becomes worse and the current account keeps on worsening you need more and more foreign capital inflows to finance your current account deficit. In late stages of the drama, investors start to realize that your fixed rate is not sustainable and start to believe that devaluation might occur. This expected depreciation leads to an increase in the expected return on foreign assets and, for given domestic interest rates, leads to capital outflows. Then the domestic foreign reserves of the central bank start to fall as it intervenes in the exchange rate market to defend its currency from depreciating.

The exchange rate crisis that followed made things only worse as the currency depreciation increased the real burden of the foreign-currency denominated debt. Weak and not very credible governments that were not committed to structural reform exacerbated the policy uncertainty and the financial panic that followed.

Crisis Theories

From a different aspect of the same issue, Wyplosz (1998)[8] made a general summary about Crisis theories and speculative attacks. According to him, Eichengreen and Wyplosz (1993) have dubbed "first generation models of crises" correspond to a situation when the fundamentals do not allow the survival of a fixed exchange rate regime.

Second generation models" show that the crises can be self-fulfilling. It is

[8] Wyplosz, Charles. Speculative Attacks and Capital Attacks. Geneva: Graduate Institute of International Studies

because there exists multiple equilibria. (Obstfeld, 1986) There is a "good" equilibrium where the markets do not attack the currency and the authorities' preference is to maintain the peg, which is possible since the fundamentals allow the survival of the regime. Simultaneously, there exists a "bad" equilibrium where an attack, if it were to occur, would succeed. This equilibrium exists because the policies required to defend the regime (raising the interest rate which may lead to a recession or a bank failures) are less desirable than abandoning the exchange rate regime.

As noted by Krugman (1996), not every country with a fixed exchange rate is susceptible to fall victim of a self-fulfilling attack. There must pre-exist some weakness, which will prevent the authorities from conducting a full-fledged defense of its currency by raising the interest rate. For example, a weak banking system may collapse or an asset price bubble may crash. The pre-existing weakness may not be lethal in and by itself, or else this would mean that the fundamentals are so bad that it can become lethal once the situation deteriorates.

Self-fulfilling attacks may affect any country (with a fixed exchange rate and a high degree of capital mobility, which is in the gray area between "fully safe" and "sure to be attacked". For this reason, they are fundamentally unpredictable.

From the literature review of the roots of Asian Financial Crisis, fixed exchange rate regime as well as crisis theories, the overall idea of the crisis can be learned. These reviews, however, can only provide a brief picture how the general environment outside Hong Kong is like. To deeply investigate the impact of such event to Hong Kong stocks, an event study is prerequisite to allow researchers to know whether it actually affects Hong Kong or not.

CHAPTER III

METHODOLOGY

Hang Seng Index Constituents Stocks between 1995 and 1998 are chosen to test the impact of the Asian Financial Crisis. According to the business nature and usual categorization of these stocks, four types of stocks are obtained. They are Property, Commerce and Industry, Utility, and Banking and Finance. The aim of the study, hence, is to identify the type of stocks which are being affected the most and at the same time, the least.

Accounting data from the annual reports of those Hang Seng Index Constituents Stocks from 1995-1998 are extracted. Thereafter, the analysis will be carried out for the period of January 1995 to December 1998.

The following fundamental variables are adopted:

1. Company Rate of Return, $R = (P_c - P_o) / P_o$

   Where P_C = the daily closing price

   P_O = the daily opening price

2. Market Rate of Return = $(HSI_c - HSI_o) / HSI_o$

   Where HSI_C = the daily closing Hang Seng Index

   HSI_O = the daily opening Hang Seng Index

3. Share Price of the Hang Seng Index Constituents Stocks

4. Profits of these Constituents Stocks attributed to Shareholders
5. Price to Earnings Ratio (P/E ratio) = Share Price / Earning per Share
6. Market-to-book Ratio = Share Price / Equity per Share
7. Hong Kong Interbank Offered Rate at the 1-month basis

Company rates of return are calculated by adopting the daily closing price and daily opening price to make a comparison of the company's daily return. Hang Seng Index is usually obtained to compose the data of the market rate of return. This can make a daily comparison with the company rate of return. Share prices are obtained on the daily basis, while the profits of these constituents stocks attributed to shareholders are obtained from annual reports on the annual basis.

Price to earnings ratio represents the earnings yield of the stocks. Market-to-book ratio represents the change of the share price with reference to the equity per share.

This event study is carried out at two levels, namely,

1. At the individual stock level
2. At the category level

At the individual stock level, the aim of the analysis will be based on the performance of individual stock, while the aim of category level will be based on the performance of the four categories against time.

CAPM Analysis

The Capital Asset Pricing Model, (CAPM) predicts the relationship between the risk and equilibrium expected returns on risky assets. In the CAPM model,

$$r_i - r_f = \alpha + \beta(r_M - r_f) + e_i$$

is applied and the Hong Kong Interbank Offered Rate at 1-month basis is

substituted as r_f, i.e. the risk-free interest rate. Market rate of return is calculated through the above equation and substituted as r_M. r_i and e_i are respectively the return and residuals on asset i. CAPM analysis will be conducted at both individual stock level and category level[9].

T-tests

Among the above variables, P/E ratio, Market-to-book ratio, share price, profit and cumulative residualss are analyzed with the change of their means. The lower limit of the study period is January 1, 1995 except the cumulative residualss. The upper limit is December 31, 1998. October 27, 1997 is set as the event day (out-break of the Asian Financial Crisis). For the cumulative residualss, the range of study is 30 days before and after the event day.

Hypothesis analysis is adopted to examine if there is a change in the means of these variables. Thus,

$$H_0 : \mu_1 \leq \mu_2$$

$$H_1 : \mu_1 > \mu_2$$

Rejection rule: If $t > t_{\alpha, v}$, then rejected H_0;

Where: $t = (X_1 - X_2) / s_{x1\text{-}x2}$,

(X_1 & X_2 are the means of variables after and before crisis)

Similarly,

$$H_0 : \mu_1 \geq \mu_2$$

$$H_1 : \mu_1 < \mu_2$$

Rejection rule: If $t < -t_{\alpha, v}$, then rejected H_0;

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[9] Bodie, Zvi. (et al). Essentials of Investments. 3rd ed. USA: McGraw Hill, 1998

Where: $t = (X_1 - X_2) / s_{x1-x2,}$

Then, the change of means, μ_1, μ_2, can be compared. Analysis can be drawn to examine if there is any effect at the event day.

Regression Analysis

Regression analysis enables us to use the sample of historical returns to estimate a relationship between the dependent variable and the explanatory variable. There may be interpreted as a single-variable regression equation of security return on the market excess return.

CHAPTER IV

EMPIRICAL ANALYSIS

Category Level

From Table 3, one can see that the result from the t-test is $\mu_1 > \mu_2$ in the property industry. This means profits in the industry are affected adversely by the crisis. Among the four categories, this industry has been eroded the most. Since the Asian Financial Crisis has a contagion effect, the adverse impact on the Hong Kong property industry has been expected to last for a period, not just the studying period from January 1, 1995 to December 31, 1998.

Since this category amounts to more than one third of the Hang Seng Index Constituents Stocks, the bad performance of this category can have a huge pressure on the whole Hong Kong market.

Similarly, the bad impact can adversely affect the market sentiment. From the investors' point of view, the slump of major share price may convey a message that the whole market is being dragged downed directly by the Asian Financial Crisis. According to the Literature Review, Hong Kong is actually among the Asian Countries which is affected the least, unlike those of South Korea, Thailand and Taiwan. Theory of Self-fulfilling prophecy can hence conclude why the bad performance of property industry can further drag down the whole market performance.

TABLE 3

T-TESTS RESULTS ON THE PROFITS OF THE FOUR CATEGORIES

Category	Company Name	t-value	Calculated t-value	Difference between 2 Means
Properties	Amoy Properties Ltd.	1.70	1.81	$Mean_1 > Mean_2$
	Cheung Kong (Holdings) Ltd.			
	China Resources Enterprises, Ltd.			
	Hang Lung Development, Ltd.			
	Henderson Investment Ltd.			
	Henderson Land Dev. Co. Ltd.			
	The H.K.& Shanghai Hotels, Ltd.			
	Hopewell Holdings Ltd.			
	Hysan Development Co. Ltd.			
	New World Development Co. Ltd.			
	Sino Land Co. Ltd.			
	Sun Hung Kai Properties Ltd.			
Banking & Finance	Bank of East Asia Ltd.	-1.75	-0.13	$Mean_1 > Mean_2$
	Hang Seng Bank Ltd.			
	HSBC Holdings plc			
Utility	CLP Holdings Ltd.	-1.90	-0.34	$Mean_1 > Mean_2$
	The H.K. & China Gas Co. Ltd.			
	H.K. Electric Holdings Ltd.			
	H.K. Telecommunications Ltd.			
Commerce & Industry	Cathay Pacific Airways Ltd.	1.68	0.29	$Mean_2 > Mean_1$
	Cheung Kong Infrastructure Holdings Ltd.			
	Citic Pacific Ltd.			
	First Pacific Co. Ltd.			
	Great Eagle Holdings Ltd.			
	Guangdong Investment Ltd.			
	Hutchison Whampoa Ltd.			
	Shanghai Industrial Investment			
	Shangri-La Asia Ltd.			
	Swire Pacific Ltd.			
	Television Broadcasts Ltd.			
	The Wharf (Holdings) Ltd.			
	Wheelock & Co.			

Besides, one should notice that the nature of the property industry is not basically a necessity to every Hong Kong citizen. One may say property is very important to Hong Kong people. This, however, is undermined by the phenomenon of bubbling of local economy, which is the most obvious from 1995 to mid-1997. That is why this study focuses on the data from this period to check the effect of the Asian Financial Crisis. Upsurge of property price has created a pressure of rising share price and optimistic market sentiment and made a strong difference between the result before and after the event day.

Banking and Finance category obtained a result, $\mu_1 > \mu_2$. This can be explained partly by the poor performance of the property market. Local banking and finance industry actually relies on local property market to provide a huge mortgage service. This mortgage service explains why they have a superior performance before the event day. Compared to the previous annual reports of these banking stocks, bad debt has been recorded an increase in the latter half of 1997 to 1998 and it is expected to sustain by a certain proportion at least up to 1999.

Hong Kong banking system always enjoys a good reputation of structured system, transparent regulatory bodies and healthy development since 1970. Hong Kong and Singapore have always been taken as a role model in the region as the index of banking and finance regulatory development. This somehow reflects a fact that local banks actually adopt a prudent principal in credit. Even though they may rely on local property market to provide a mortgage service, they only offered about 50% - 70 % mortgage to borrowers. This means they have already prepared to lessen the risk of bad debt even in the booming days in 1995-1997. Local banking

and finance industry has therefore suffered a less severe effect as compared to those of property industry.

One should also notice that Asian Financial Crisis also played a role in affecting the performance of the banking and finance industry. Among these banks, they have an exposure to the nearby Asian countries, for instance, HSBC has announced to temporarily suspend the expansion plan in Indonesia and prepared a higher portion of bad debt to those business related to South-east Asia. One cannot deny that the market risk in other Asian countries did affect the performance and explains why it is that $\mu_1 > \mu_2$.

Utility category has the result of $\mu_1 > \mu_2$. Actually, it is very explicit in terms of earnings. From a general perspective, the economic situations are more difficult for the utility category. Many companies adopt cost-saving policy like lay-off and outsourcing rather than tariff increment. Theoretically, utility category should be the least affected sector. With government policy of open competition like Hongkong Telecommunications, earnings may no longer be guaranteed. Hence, they prefer geographical diversification as their corporate strategies, seeing the harsh business environment in Hong Kong may be unchangeable in the short run.

In the commerce and industry category, the result obtained is $\mu_1 < \mu_2$. One explanation may be the diversification of business throughout the world. The poor performance in Asian markets can be easily diluted in these stocks. This is also one of reasons why these conglomerates choose to diversify their risk exposure in Hong Kong, or even Asia. As a result, this category becomes the only sector with $\mu_2 > \mu_1$.

Individual Stock Level

P/E ratio Analysis

TABLE 4

T-TESTS RESULTS ON THE P/E RATIOS OF THE HANG SENG INDEX CONSTITUENTS STOCKS

Company Name	t-value	Calculated t-value	Difference between 2 Means
Amoy Properties Ltd.	1.645	61.7109602	$Mean_1>Mean_2$
Bank of East Asia Ltd.	1.645	51.6294034	$Mean_1>Mean_2$
Cathay Pacific Airways Ltd.	-1.645	-10.715259	$Mean_2>Mean_1$
Cheung Kong (Holdings) Ltd.	1.645	4.56599874	$Mean_1>Mean_2$
Cheung Kong Infrastructure Holdings Ltd.	1.645	31.20241	$Mean_1>Mean_2$
China Resources Enterprises, Ltd.	1.645	26.5709696	$Mean_1>Mean_2$
Citic Pacific Ltd.	1.645	37.2485184	$Mean_1>Mean_2$
CLP Holdings Ltd.	1.645	11.6348471	$Mean_1>Mean_2$
First Pacific Co. Ltd.	1.645	70.334182	$Mean_1>Mean_2$
Great Eagle Holdings Ltd.	1.645	84.453732	$Mean_1>Mean_2$
Guangdong Investment Ltd.	1.645	33.6994718	$Mean_1>Mean_2$
Hang Lung Development, Ltd.	1.645	11.5354412	$Mean_1>Mean_2$
Hang Seng Bank Ltd.	1.645	27.1094608	$Mean_1>Mean_2$
Henderson Investment Ltd.	1.645	13.6761243	$Mean_1>Mean_2$
Henderson Land Dev. Co. Ltd.	1.645	21.2836922	$Mean_1>Mean_2$
The H.K. & China Gas Co. Ltd.	1.645	12.2378364	$Mean_1>Mean_2$
The H.K. & Shanghai Hotels, Ltd.	N.A.	N.A.	N.A.
Hongkong Electric Holdings Ltd.	1.645	25.0731	$Mean_1>Mean_2$
H.K. Telecommunications Ltd.	1.645	28.11414	$Mean_1>Mean_2$
HSBC Holdings plc	-1.645	-3.65167	$Mean_2>Mean_1$
Hutchison Whampoa Ltd.	1.645	4.421733	$Mean_1>Mean_2$
Hysan Development Co. Ltd.	1.645	18.74605	$Mean_1>Mean_2$
New World Development Co Ltd.	1.645	23.13404	$Mean_1>Mean_2$
Shangri-La Asia Ltd.	1.645	4.188156	$Mean_1>Mean_2$
Sino Land	1.645	17.72162	$Mean_1>Mean_2$
Sun Hung Kai Properties Ltd.	1.645	25.41192	$Mean_1>Mean_2$
Swire Pacific Ltd.	1.645	68.3288	$Mean_1>Mean_2$
Television Broadcasts Ltd.	1.645	46.42697	$Mean_1>Mean_2$
The Wharf Holdings Ltd.	1.645	15.61809	$Mean_1>Mean_2$
Wheelock & Co.	1.645	25.45181	$Mean_1>Mean_2$

P/E ratio can demonstrate the companies' long run growth prospect, as well as to the current earnings per share relative to the long run trend line, i.e. the P/E ratio will demonstrate a relationship with growth. Among the Hang Seng Index Constituents Stocks, only do 2 companies have a higher mean in P/E ratio after the event day, namely Cathay Pacific Airways and HSBC. The majority of the stocks have a higher P/E ratio before the event day. This appears to be reasonable because the earnings per share are usually taken from firms' previous annual reports, while share price is taken daily. Because of the slump of the stock market, the poor effect would be reflected immediately at the share price. At the same time, poor earnings per share cannot be fully reflected in 1997 annual report until those of 1998. Hence, the mean P/E ratio after the event day will be inevitably lower than those before.

In retrospect of the two exceptional companies with higher mean P/E ratio after the crash, one may say that their company-specific reasons make the P/E ratio resistant to the environment. The earnings per share of HSBC Holdings, for example, has increased for about 19% while the share price rose about 31%. The increase in earnings is larger than the rise in share price. Therefore, HSBC has a larger mean P/E ratio after the turmoil. Similarly, earnings per share of Cathay Pacific Airways have dropped 50% and so did its share price recorded a slide of 45%. The decrease of earnings is more drastic than the decrease of its share price. On that account, Cathay Pacific Airways have larger mean P/E ratios after the crash.

Share Price Analysis

TABLE 5

T-TESTS RESULTS OF THE SHARE PRICE OF THE HANG SENG INDEX CONSTITUENTS STOCKS

Company Name	t-value	Calculated t-value	Difference between 2 Means
Amoy Properties Ltd.	1.645	42.32232718	$Mean_1>Mean_2$
Bank of East Asia Ltd.	1.645	35.26754013	$Mean_1>Mean_2$
Cathay Pacific Airways Ltd.	1.645	85.38735731	$Mean_1>Mean_2$
Cheung Kong (Holdings) Ltd.	1.645	12.18983169	$Mean_1>Mean_2$
Cheung Kong Infra. Holdings Ltd.	1.645	5.449020086	$Mean_1>Mean_2$
China Resources Enterprises, Ltd.	-1.645	-2.686718426	$Mean_2>Mean_1$
Citic Pacific Ltd.	1.645	11.17456515	$Mean_1>Mean_2$
CLP Holdings Ltd.	-1.645	-2.733792651	$Mean_2>Mean_1$
First Pacific Co. Ltd.	1.645	64.6420341	$Mean_1>Mean_2$
Great Eagle Holdings Ltd.	1.645	61.7885178	$Mean_1>Mean_2$
Guangdong Investment Ltd.	1.645	26.05267982	$Mean_1>Mean_2$
Hang Lung Development, Ltd.	1.645	41.89825521	$Mean_1>Mean_2$
Hang Seng Bank Ltd.	1.645	17.48022981	$Mean_1>Mean_2$
Henderson Investment Ltd.	1.645	29.85964605	$Mean_1>Mean_2$
Henderson Land Dev. Co. Ltd.	1.645	41.32842172	$Mean_1>Mean_2$
H.K. & China Gas Co. Ltd.	-1.645	-7.565687934	$Mean_2>Mean_1$
The H.K. & Shanghai Hotels, Ltd.	1.645	60.29783834	$Mean_1>Mean_2$
H.K. Electric Holdings, Ltd.	1.645	3.103085683	$Mean_1>Mean_2$
H.K. Telecommunications Ltd.	-1.645	-10.84958192	$Mean_2>Mean_1$
Hopewell Holdings Ltd.	1.645	37.00618722	$Mean_1>Mean_2$
HSBC Holdings plc	-1.645	-18.6272651	$Mean_2>Mean_1$
Hutchison Whampoa Ltd.	1.645	5.114284637	$Mean_1>Mean_2$
Hysan Development Co. Ltd.	1.645	44.33104184	$Mean_1>Mean_2$
New World Development Co. Ltd.	1.645	32.334883	$Mean_1>Mean_2$
Shanghai Industrial Investment	1.645	10.24193125	$Mean_1>Mean_2$
Shangri-La Asia Ltd.	1.645	57.32850036	$Mean_1>Mean_2$
Sino Land Co. Ltd.	1.645	55.25854926	$Mean_1>Mean_2$
Sun Hung Kai Properties Ltd.	1.645	32.2927112	$Mean_1>Mean_2$
Swire Pacific Ltd.	1.645	34.30384518	$Mean_1>Mean_2$
Television Broadcasts Ltd.	1.645	73.39731986	$Mean_1>Mean_2$
The Wharf (Holdings) Ltd.	1.645	71.53633387	$Mean_1>Mean_2$
Wheelock & Co.	1.645	59.4010347	$Mean_1>Mean_2$

Other than P/E ratios, the performance of share price of the Hang Seng Index Constituents Stocks is also a useful tool to interpret the performance of different companies before and after the crisis. It can be found that there are five companies having the unexpected results that have a higher mean share price after the event day. They are China Resources Enterprises, CLP Holdings, Hong Kong & China Gas, Hongkong Telecommuncations and also HSBC Holdings.

China Resources Enterprises has a balanced mix of investments in Hong Kong and the Chinese Mainland, the group's strategy not only strengthens its recurrent income base but also achieves strong earnings growth in 1997. The higher mean share price results from its prudent approach in financial management that has enabled it to successfully avoid any repercussions arising from the financial instability in Asia. In addition, the group has made a long-term strategy of expanding its core business and investing in many mega-projects. The above actions taken by China Resources Enterprises have strengthened the confidence of its shareholders and so it maintains a high share price even after the crisis.

China Light & Power Improvements in CLP Power's cost position from 1995 to 1998 means that the Company is relatively well positioned to cope with the economic downturn in 1997 - 1998. Staff levels in the local utility business are now 37% below those in 1993, with the vast majority of that reduction achieved through voluntary departure schemes before the onset of this year's recession. Substantial cost savings have been achieved again in every major part of the Scheme of Control business. The increased energy demand comes from the construction and opening of Hong Kong's new airport and its associated rail links as well as the above average temperatures. All this means its share price is independent of the economic situations.

Hong Kong & China Gas was able to achieve a healthy performance despite a weaker economy for the years 1997 and 1998. Hong Kong & China Gas concentrates its investment in building more pipelines in order to meet the increasing demands for gas supply. Financial instability does not affect the earnings of the group and so it is not surprising that its share price has a better performance in a poor economy.

Hongkong Telecommuncations' strong share price performance is contributed by two reasons: (1) it has reached a landmark agreement with the HKSAR Government for the surrender of its exclusive international license some 8 years early in return for HK$3452 million of compensation. The agreement made a positive effect on the stock market even in an adverse economic environment; (2) the company has a solid growth in all operation areas of the business.

The banking giant, HSBC Holdings has also recorded a higher mean share price even after the turmoil. Its diverse operations in the U.S., U.K., Canada, Middle East did very well in previous years and the diversification has secured the problems experienced in Asia. Its strong financial background made it have the best performance in the stock market among the Hang Seng Index Constituents Stocks.

Market-to-Book Ratio Analysis

TABLE 6

T-TESTS RESULTS OF THE MARKET-TO-BOOK RATIO ANALYSIS OF THE HANG SENG INDEX CONSTITUENTS STOCKS

Company Name	t-value	Calculated t-value	Difference % 2 Means
Amoy Properties Ltd.	1.645	34.5149434	$Mean_1 > Mean_2$
Bank of East Asia Ltd.	1.645	49.75069757	$Mean_1 > Mean_2$
Cathay Pacific Airways Ltd.	1.645	84.00173286	$Mean_1 > Mean_2$
Cheung Kong (Holdings) Ltd.	1.645	31.86073224	$Mean_1 > Mean_2$
Cheung Kong Infrastructure Holdings Ltd.	N.A.	N.A.	N.A.
China Resources Enterprises	-1.645	-3.411577975	$Mean_2 > Mean_1$
Citic Pacific Ltd.	1.645	29.65611006	$Mean_1 > Mean_2$
CLP Holdings Ltd.	1.645	24.46451295	$Mean_1 > Mean_2$
First Pacific Co. Ltd.	N.A.	N.A.	N.A.
Great Eagle Holdings Ltd.	1.645	88.11351189	$Mean_1 > Mean_2$
Guangdong Investment Ltd.	1.645	31.17556355	$Mean_1 > Mean_2$
Hang Lung Development Ltd.	1.645	47.18436856	$Mean_1 > Mean_2$
Hang Seng Bank Ltd.	1.645	24.48272983	$Mean_1 > Mean_2$
Henderson Investment Ltd.	1.645	30.31964947	$Mean_1 > Mean_2$
Henderson Land Dev. Co. Ltd.	1.645	56.78792207	$Mean_1 > Mean_2$
The H.K. & China Gas Co. Ltd.	1.645	5.363969632	$Mean_1 > Mean_2$
H.K. & Shanghai Hotels, Ltd.	1.645	59.94689144	$Mean_1 > Mean_2$
H.K. Electric Holdings Ltd.	1.645	24.95100987	$Mean_1 > Mean_2$
H.K. Telecommunications Ltd.	1.645	13.69489576	$Mean_1 > Mean_2$
Hopewell Holdings Ltd.	1.645	101.2712333	$Mean_1 > Mean_2$
HSBC Holdings plc	-1.645	-15.73182763	$Mean_2 > Mean_1$
Hutchison Whampoa Ltd.	1.645	5.960787025	$Mean_1 > Mean_2$
Hysan Development Co. Ltd.	1.645	54.00244348	$Mean_1 > Mean_2$
New World Dev. Co. Ltd.	1.645	34.81539201	$Mean_1 > Mean_2$
Shanghai Industrial Investment	N.A.	N.A.	N.A.
Shangri-La Asia Ltd.	1.645	35.40129332	$Mean_1 > Mean_2$
Sino Land Co. Ltd.	1.645	49.954646	$Mean_1 > Mean_2$
Sun Hung Kai Properties Ltd.	1.645	40.54800497	$Mean_1 > Mean_2$
Swire Pacific Ltd.	1.645	67.00087414	$Mean_1 > Mean_2$
Television Broadcasts Ltd.	1.645	91.14388733	$Mean_1 > Mean_2$
The Wharf (Holdings) Ltd.	1.645	69.93838113	$Mean_1 > Mean_2$
Wheelock & Co.	1.645	65.01104188	$Mean_1 > Mean_2$

The market-to-book ratio equals the market price of a share of the firm's common stock divided by its book value, i.e., shareholders' equity per share. Analysts sometimes consider the stock of a firm with a low market-to-book ratio to be a "safer" investment, seeing the book value as a "floor" supporting the market price. With a low market-to-book ratio firms are relatively underpriced. So, it is serving as a proxy for a risk factor that affects equilibrium expected return. In this case, only China Resources Enterprises and HSBC Holdings has a higher mean of market-to-book ratios after the crash. The higher mean ratios are mainly due to the companies' high market price, which reflects the firms' value as a going concern.

Cumulative Residuals Analysis

TABLE 7

T-TESTS RESULTS OF CUMULATIVE RESIDUALS ANALYSIS OF THE HANG SENG INDEX CONSTITUENTS STOCKS

Company Name	t-value	Calculated t-value	Difference % 2 Means
Amoy Properties Ltd.	1.658	2.701588791	$Mean_1 > Mean_2$
Bank of East Asia Ltd.	1.671	11.29432497	$Mean_1 > Mean_2$
Cathay Pacific Airways Ltd.	1.645	1.045188354	$Mean_2 > Mean_1$
Cheung Kong (Holdings) Ltd.	1.645	1.21094224	$Mean_2 > Mean_1$
Cheung Kong Infrastructure Holdings Ltd.	1.671	4.050589306	$Mean_1 > Mean_2$
China Resources Enterprises Ltd.	-1.658	-2.685097443	$Mean_2 > Mean_1$
Citic Pacific Ltd.	-1.671	-3.782856149	$Mean_2 > Mean_1$
CLP Holdings Ltd.	-1.671	-1.487263697	$Mean_1 > Mean_2$
First Pacific Co. Ltd.	-1.671	-7.822840988	$Mean_2 > Mean_1$
Great Eagle Holdings Ltd.	1.671	4.686194342	$Mean_1 > Mean_2$
Guangdong Investment Ltd.	-1.658	-4.79552963	$Mean_2 > Mean_1$
Hang Lung Development, Ltd.	-1.671	-3.37482148	$Mean_2 > Mean_1$
Hang Seng Bank Ltd.	1.684	1.685374033	$Mean_1 > Mean_2$
Henderson Investment Ltd.	-1.658	-5.442740948	$Mean_2 > Mean_1$
Henderson Land Dev. Co. Ltd.	1.645	8.964816195	$Mean_1 > Mean_2$
H.K. & China Gas Co. Ltd.	-1.658	-5.920703262	$Mean_2 > Mean_1$
H.K. & Shanghai Hotels, Ltd.	-1.658	-3.450678252	$Mean_2 > Mean_1$
H.K. Electric Holdings Ltd.	1.645	1.994274386	$Mean_1 > Mean_2$
H.K. Telecommunications Ltd.	-1.671	-1.281048637	$Mean_1 > Mean_2$
Hopewell Holdings Ltd.	-1.671	-0.410272941	$Mean_1 > Mean_2$
HSBC Holdings	-1.645	-1.231873611	$Mean_1 > Mean_2$
Hutchison Whampoa Ltd.	-1.671	-10.68484622	$Mean_2 > Mean_1$
Hysan Development Co. Ltd.	1.658	1.261387459	$Mean_2 > Mean_1$
New World Dev. Co. Ltd.	1.671	4.25540849	$Mean_1 > Mean_2$
Shanghai Industrial Investment	1.671	4.647163267	$Mean_1 > Mean_2$
Shangri-La Asia Ltd.	1.645	0.185277389	$Mean_2 > Mean_1$
Sino Land Co. Ltd.	1.671	7.388878408	$Mean_1 > Mean_2$
Sun Hung Kai Properties Ltd.	1.671	7.428792021	$Mean_1 > Mean_2$
Swire Pacific Ltd.	1.645	5.284033808	$Mean_1 > Mean_2$
Television Broadcasts Ltd.	1.684	0.823072932	$Mean_2 > Mean_1$
The Wharf (Holdings) Ltd.	1.658	4.839606374	$Mean_1 > Mean_2$
Wheelock & Co	1.671	1.85622823	$Mean_1 > Mean_2$

Regression of Residuals against Time

TABLE 8

RESULTS OF REGRESSION ANALYSIS OF RESIDUALS AGAINST TIME

Company Name	Slope	y-intercept
Amoy Properties Ltd.	5.806103936	-0.057446909
Bank of East Asia Ltd.	-0.832828915	-0.308325556
Cathay Pacific Airways Ltd.	-0.428137426	-0.089638743
Cheung Kong (Holdings) Ltd.	0.382043967	-0.002068684
Cheung Kong Infrastructure Holdings Ltd.	3.874269103	-0.417775749
China Resources Enterprises, Ltd.	-4.877734812	0.053166965
Citic Pacific Ltd.	0.084089652	0.016138426
CLP Holdings Ltd.	0.226091082	0.082442965
First Pacific Co. Ltd.	0.126330496	0.419501966
Great Eagle Holdings Ltd.	-5.554329802	-0.115894614
Guangdong Investment Ltd.	-9.082760598	0.244866463
Hang Lung Development, Ltd.	2.839432921	0.058220765
Hang Seng Bank Ltd.	-2.392091713	-0.012162683
Henderson Investment Ltd.	0.043917358	0.127541366
Henderson Land Dev. Co. Ltd.	2.241160225	-0.142834686
Hong Kong & China Gas Co. Ltd.	2.513302004	0.111785329
H.K. & Shanghai Hotels, Ltd.	-0.133509639	0.11185484
H.K. Electric Holdings Ltd.	2.057029084	-0.019430284
H.K. Telecommunications Ltd.	-0.086062739	0.013801882
Hopewell Holdings Ltd.	-3.072838998	0.022869504
HSBC Holdings plc	2.183012882	0.018914056
Hutchison Whampoa Ltd.	2.151589203	0.136956061
Hysan Development Co. Ltd.	2.004997664	-0.004699124
New World Development Co. Ltd.	-6.145585938	-0.099742695
Shanghai Industrial Investment	8.085540943	-0.443640113
Shangri-La Asia Ltd.	-4.235359501	-0.037930534
Sino Land Co. Ltd.	-0.805078154	-0.234304923
Sun Hung Kai Properties Ltd.	-1.489793945	-0.125452701
Swire Pacific Ltd.	-4.058840332	-0.111543227
Television Broadcasts Ltd.	-4.349730194	-0.156464736
The Wharf (Holdings) Ltd.	-0.760526323	-0.088445991
Wheelock & Co.	-3.760538726	-0.009069204

The residual term in the CAPM modern represents the difference between the actual stock return and the return that would be predicted from the regression equation describing the usual relationship between the stock and the market. Therefore, residuals can be used to measure the impact of firm-specific events which is part of uncertainty independent of the market factor during particular interval.

Cathay Pacific Airways, Cheung Kong (Holdings), China Resources Enterprises, Citic Pacific, First Pacific, Guangdong Investment, Hang Lung Development, Henderson Investment, Hong Kong & China Gas, Hong Kong & Shanghai Hotels, Hutchison Whampoa, Hysan Development, Shangri-La Asia and Television Broadcasts have a higher mean cumulative residuals after the crisis. The higher mean of cumulative residuals demonstrates that firms undergo a larger risk that cannot be eliminated by diversification. That means the above companies are exposed to a larger market-risk after the turmoil.

Cheung Kong (Holdings), China Resources Enterprises, Henderson Investment and Hysan Development are under the Property category. The five companies have been exposed to a larger firm-specific risk that cannot be diversified by their active operations in a broader range of businesses. The higher cumulative residuals values mean the performance of companies have been highly exposed to the market fluctuation. During the second half of 1997, the overall economic growth experienced a rapid downturn when the unforeseen financial turmoil swept across the region. As the returns of the above four companies have a close link to the consumer spending sentiment and interest rate, the fluctuation on the market would experience a significant impact on these four companies. The external uncertainty

and pressure over the currency peg will not only keep consumers invest more prudent or even terminate their investment, but also make the interest rate more volatile.

Under the Commerce and Industry category, Citic Pacific, however, has a higher cumulative residuals after the crisis. Although it has four main businesses include infrastructure, property, trading, distribution and consumer credit, and industrial manufacturing, the latter two only contribute to 10% of the group's earnings. The infrastructure and the property sectors bring 60% and 30% of the group's earnings respectively. Since 1997, Citic has made a substantially change in its operation, that is, increased its involvement in the property development gradually. The action has made Citic more exposed to market risk.

First Pacific has diversified businesses in four main categories: marketing & distribution, telecommunications, property and also banking. The four main businesses contribute nearly equal share to the group's operation. In fact, with its diversified strategy, the market risk will possess little effect on First Pacific. Its major investment, however, concentrates in Asia Pacific region such as the Philippines, Indonesia, Thailand and Hong Kong. Indonesia and Thailand are the regions, which are severely attacked by the crisis. Owing to the fact that First Pacific has made 87% operations in the Philippines, Indonesia and Thailand, the market risk that the group bears will substantially increase after the crisis.

Being a Guangdong-based conglomerate with a balanced portfolio in 5 core business areas: industrial, infrastructure, property, travel & hotel, wholesale & retail, Guangdong Investment is another corporation which has a higher cumulative residuals after the turmoil. Nevertheless, property, travel & hotel and wholesale are the operations that highly related to the market performance. The decline in hotel

industry, property market and sales as well as the increase in interest expenses have made the group face a greater market risk. Its diversification strategy has made no exemption from the attack of the crisis.

Hutchison Whampoa's five core businesses include property development & holdings, ports & related services, retailing, telecommunications and infrastructure. As a result of pressures on the local currency resulting from devaluation and the economic turmoil, the impact has been expressed in the group's property and retailing sectors. In addition, the decline in export and import trade in the Asian region has made an adverse effect on its ports business. Contrarily, the performance of telecommunications and infrastructure remains strong after the economic fluctuation. Therefore the group will recover shortly even though it has a greater mean cumulative residuals after the turmoil.

The main businesses of Shangri-La Asia are hotels and property and its operations are across South-East Asian region – Hong Kong, the Philippines, Jakarta, Fiji Island and the like. The rate of occupancy of the group's seven hotels, serviced apartments, office space and commercial areas is highly attacked by the crisis. Since the performance of the hotel and the property businesses is highly correlated with the economy, the group is greatly exposed to the market risk after the crisis. Furthermore, its operation areas are in the severely suffered regions and so the recovery of the group will be seen only if there is a great improvement in the Asian market.

TVB's current scope of activities includes video distribution, telecast licensing, programme production, airtime/VC management, cable operation and satellite television. In recently years, the corporation has expanded its business to Malaysia, Thailand, Taiwan, Singapore and the Philippines and so the action undoubtedly

increase the group's market risk and so its cumulative residuals is high after the turmoil.

Locating in Hong Kong as the headquarters, Cathay Pacific Airways has disappointing results this year. The results fully reflect the impact of the Asian financial downturn, which has reduced both passenger loads and yields. The amount of cargo transported falls. The airline's related businesses of catering and aircraft maintenance are also adversely affected. Almost all routes served by the airline suffer, particularly those to Japan and Southeast Asia, followed by the routes to Europe and North America. The weakening of Asian currencies, tough competition, and a reduction in First Class and Business Class travel resulted in yields declining much more sharply than passenger loads. After the financial crisis, Cathay Pacific's profitability will rely on the improvement of the overall economic environment in Asia.

The Hongkong & Shanghai Hotels faced a difficult time since mid-1997. The decline in visitor arrivals, particularly visitors from Japan, led to the low occupancies level of the Peninsula and The Kowloon Hotel. Its operations are mainly in Hong Kong, Thailand, Bangkok and Jakarta. In Bangkok, the occupancy of the office tower has been affected for the fact that the tenants are in financial difficulty. The currency devaluation and the uncertain economic climate in Jakarta, some projects have made to suspend.

1997 and 1998 are the difficult years for Hong Kong & China Gas because it froze the gas prices in order to demonstrate its concern for the community. The economic downturn had an impact on the group's commercial and industrial sales. The weak property sector led to a slowdown in the occupation of new private and public apartments, which in turn affected gas consumption. Being one of the

companies in the utility sector, however, Hong Kong & China Gas's suffering from the economic downturn is the least among the Hang Seng Index Constituents Stocks.

From the plots of 33 Hang Seng Index Constituents Stocks Cumulative Residuals against Time, we observe that there are some abnormal fluctuations in some companies' cumulative residuals during the time span. They are Citic Pacific, First Pacific, Guangdong Investment, Hutchison Whampoa, Sun Hung Kai Properties, Sino Land and Hopewell Holdings.

The first four companies are among the Commerce & Industry category and all of them have cumulative residuals' change from negative to positive before and after the turmoil. The more positive the cumulative residuals, the more risky the company will be. Therefore, the results explicitly show that the firms are facing a higher market risk after the crisis even though their portfolios are highly diversified.

Sun Hung Kai Properties, Sino Land and Hopewell Holdings are under the Property sector, the signs of the first two companies' cumulative residuals' change from positive to negative. Provided that the cumulative residuals are negative, the return will be greatly reduced. Before the economic turmoil, Sun Hung Kai and Sino Land were the companies making the largest amount of profit among the Hang Seng Index Constituents Companies. Their returns on the property market have been deeply attacked by the crisis, which has led to a substantial fall of their profits.

Hopewell Holdings has a disappointed performance before October 1997. The group's poor performance is due to the collapse of some construction projects in South East Asia. The weak Thai economy and the devaluation of Baht have also had an adverse impact on the group's profit. The failure of the group's performance is before our selected time span and so we obtain an abnormal change on the signs

of its cumulative residuals.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS OF THE STUDY

Conclusions

In retrospect of the reasons of the Asian Financial Crisis, Asian countries have risked their economies in over-ambitious development, ignorance of moral hazard problems, poor governance of financial institutions, market overreaction, fixed exchange rate regime and so on. All of these give rise to the contagion phenomenon of the downfall of the Asian markets in October 1997. Hong Kong is no exception. Yet, one may see the flip of the coin that Hong Kong has a highly developed market structure, which protects its companies from the adverse effect to a certain extent.

After the crisis, Hong Kong property industry has suffered the most for the reason of burst of speculation bubbles and poor market sentiments toward property stocks. Having a close relationship with property industry, banking and finance industry also suffers from free-falling mortgage businesses during the crisis and business exposure in other Asian countries. Furthermore, utility industry also has been adversely affected by the crisis since the business environment is tougher and competition is keener. Amongst the four categories, the commerce and industry category has an unaffected performance from the crisis from which diversification may provide a satisfactory answer.

In terms of P/E ratios, the majority of stocks have a high P/E ratio before the event day with only two exceptional companies. This appears to be reasonable since the earnings per share is usually taken from the previous year while share price is taken daily.

Share price is undoubtedly affected the most among the fundamental variables chosen. Among the constituents stocks, only do five companies have unexpected results due to individual company strategies. Their strategies enable them independent of the economic situations.

From the analysis of the market-to-book ratio, one can conclude that the majority of the stocks chosen have a lower ration. This means that they are relatively underpriced after the crash.

About half of the companies have a higher mean cumulative residuals after the event day. This means that these firms undergo a larger risk that cannot be eliminated by diversification of individual businesses and they are exposed to a larger market risk accordingly.

To conclude, Hong Kong stocks are generally under the adverse effect of the Asian Financial Crisis. In acquaintance with the Hong Kong Monetary Authority's policy of upholding the dollar peg, local stock market further suffers as it can be seen from the theory of fixed exchange rate upholding by the central bank and inability to control money supply. Hence, the future researcher should pay closer attention to the historical lessons learned from different crises and make a comparison to see if local stocks can lessen the adverse impact or avoid the crash. From the analysis of this event study, the following implications can be drawn as hints to remain safe even in the financial storm.

Implications of the Study

Financially Incapable Businesses

When there is economic downturn, many firms cannot borrow money as much as they would like. When they cannot borrow, they must resort to issue new shares on the stock market. Typically, the stock market does not fare well in crisis so that the firms would have a hard time issuing new shares. Giving up a large share of their firm to raise funds may be one of best methods of tackling problem of the lack of funds. In addition, firms may have the opportunity to sell off their less profitable subsidiaries and concentrate resources on the bigger businesses.

Prudent Treasury Policy

Various hedging instruments including foreign exchange forwards, interest rate collars and swaps and cross currency swaps can be employed to manage currency risk, interest exposures and long-term investment portfolio. In order to maintain a more balanced debt profile, it is advised that companies' borrowing should be fixed rate based. Companies should not be over-ambitious in those developing countries with overexpansion. Prudent treasury policies should be followed.

Careful International Expansion

Bearing in mind with careful expansion policies, corporations should diverse its businesses in different regions of the world so as to lower the risks when there is an economic downturn in its host country. In addition, the investments should only be made in those regions, which promise a return at a minimum risk, to follow the

prudent treasury policy. One of the methods that companies may take advantage of global investment opportunities is using alliance. Alliance will help partners introduce a range of new products or benefits for customers, improve each others' delivery networks, increase customer base and make one party acquire abundant resources from the region where the other party is operating. In other words, each party in alliance will share risks taken through diversification.

With the aforementioned implications from the study, companies are advised to maintain their own corporate objectives like careful financial arrangements and long-term business diversification policies. Recalled from the Literature Review, the outbreak of the Asian Financial Crisis was expected by nobody. The market sentiments in these ASEAN-4 countries as well as their neighboring markets were prospering with no attention on the roots of the crisis. In that sense, market risk cannot be avoided. Only can careful companies polices lessen the impact or divert the loss into gain by focusing less risky projects. Hence, the lessons from the crisis are actually a mixed blessing to Hong Kong companies with regard to the results of the empirical analysis.

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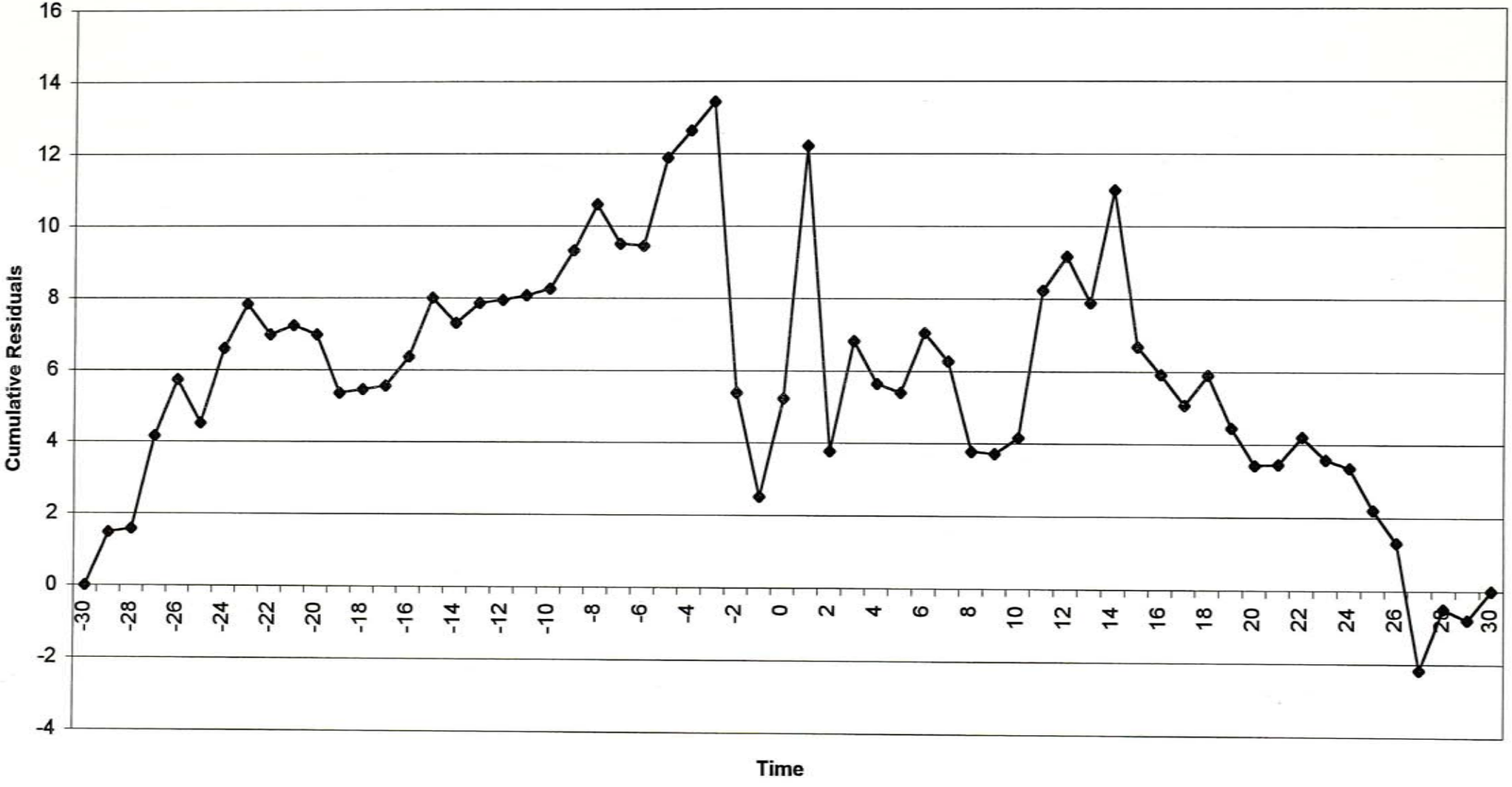
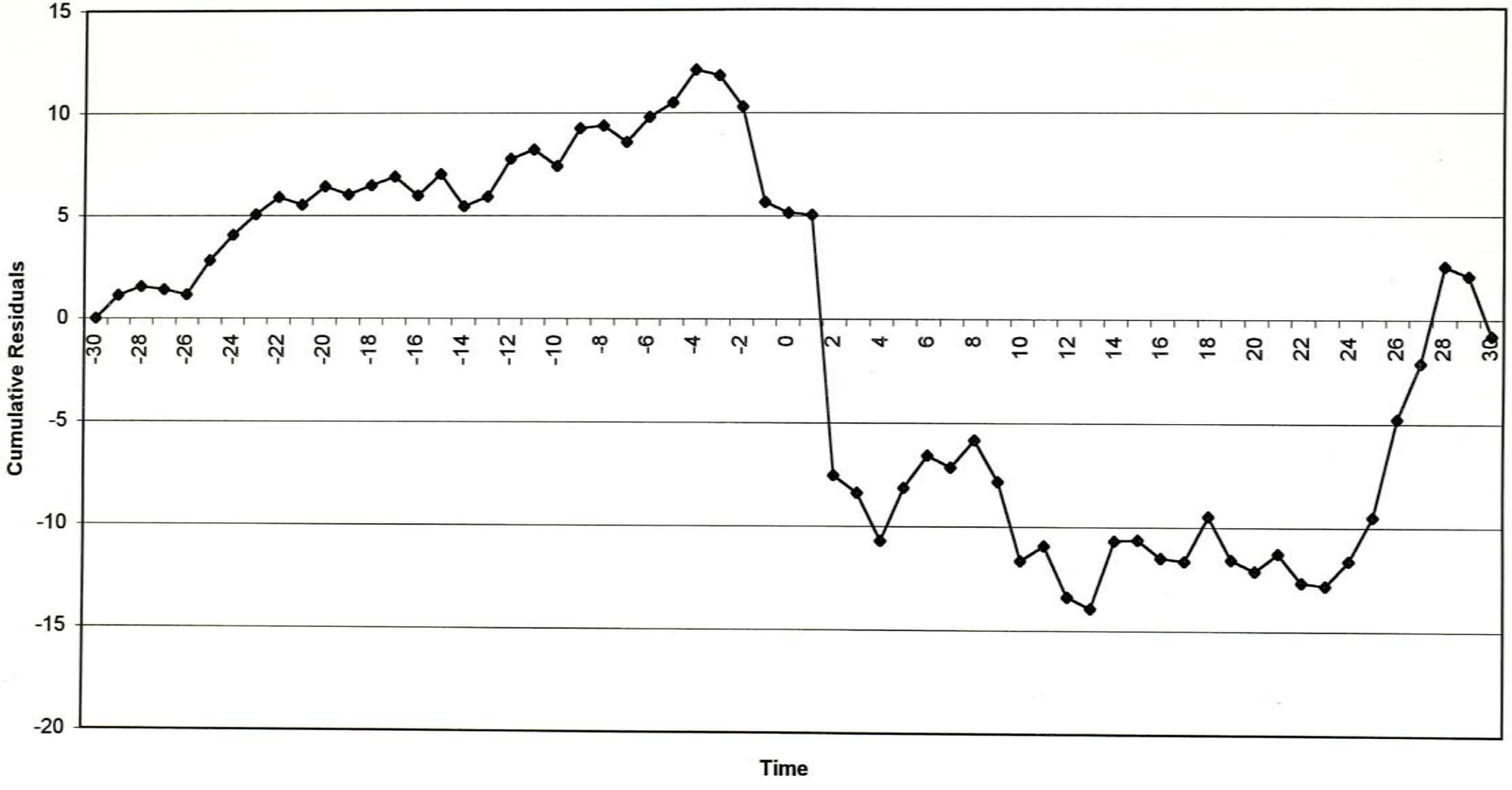
APPENDIX

Graphs of Cumulative Residuals against Time of the Hang Seng Index Constituents Stocks

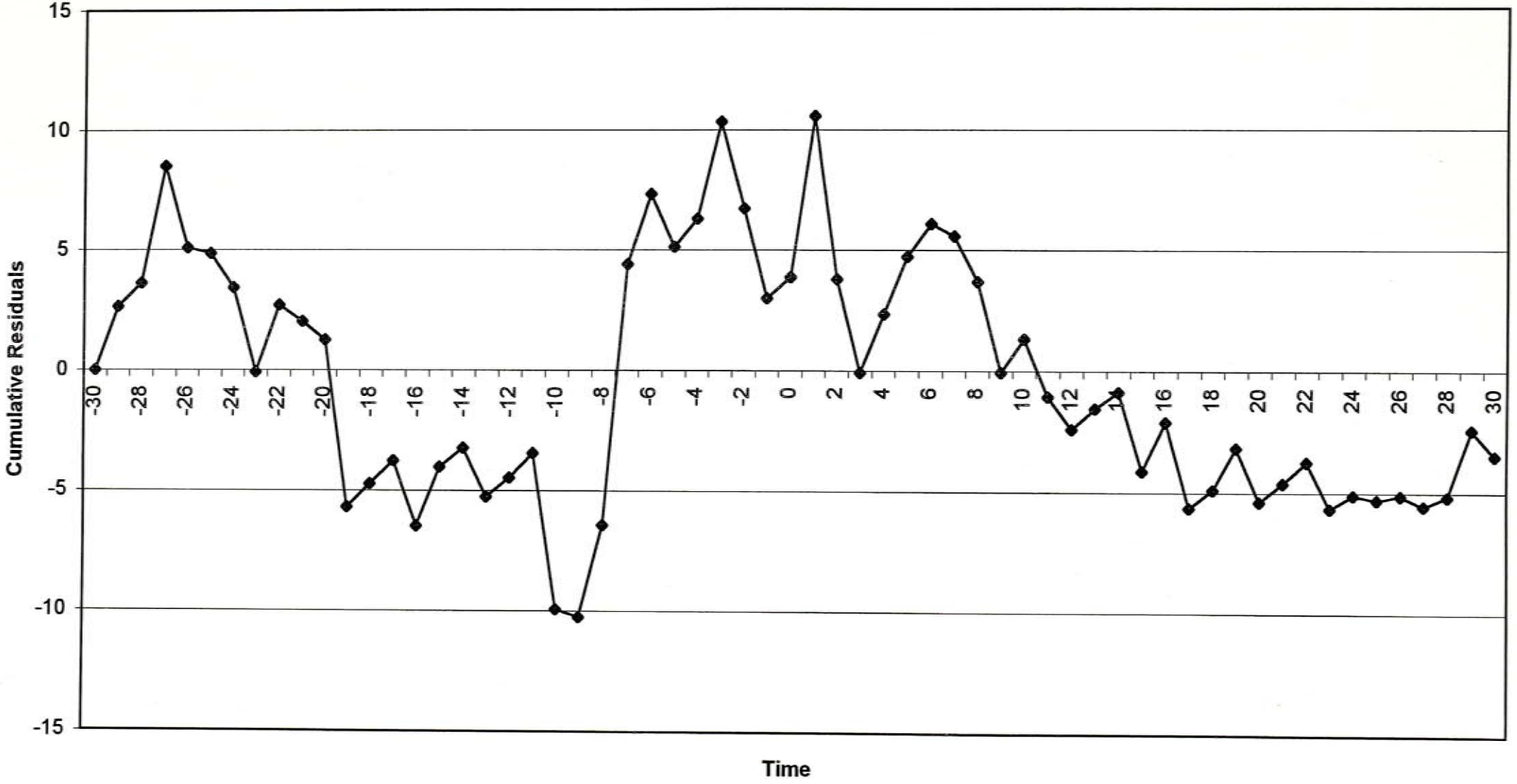
Graph of Amoy Properties
Cumulative Residuals against Time



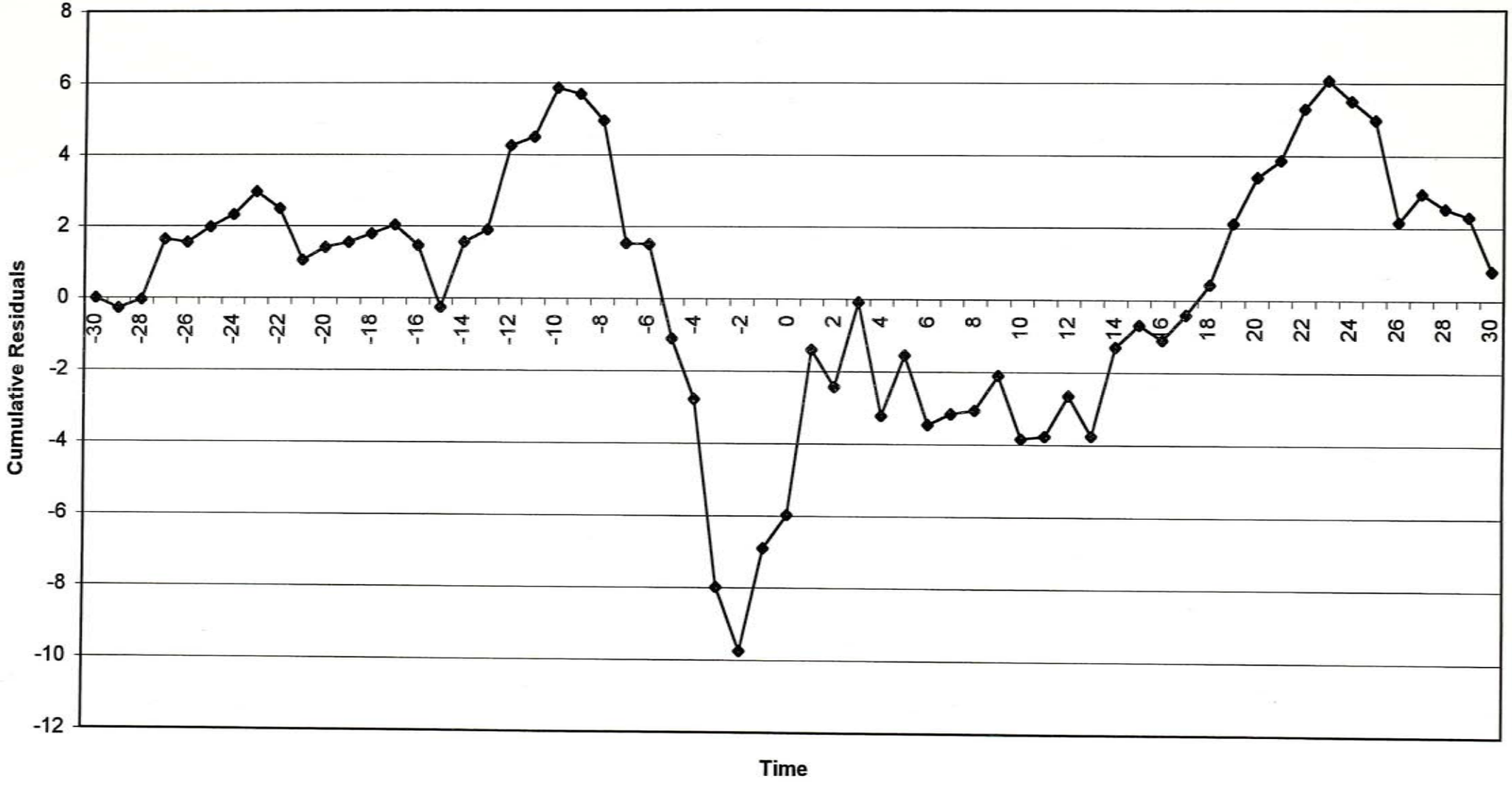
Graph of Bank of East Asia Ltd
Cumulative Residuals against Time



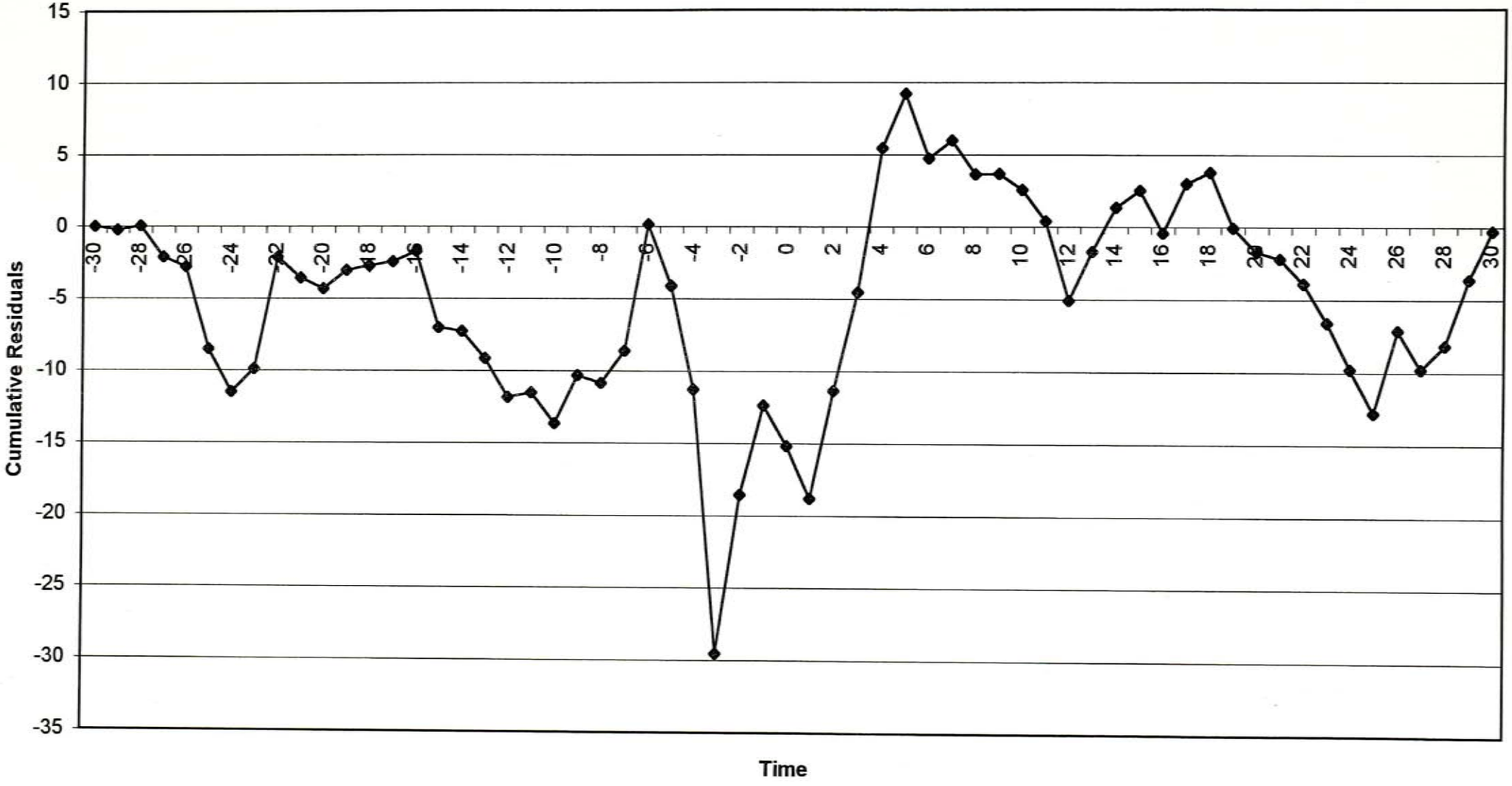
Graph of Cathay Pacific Airways Ltd
Cumulative Residuals against Time



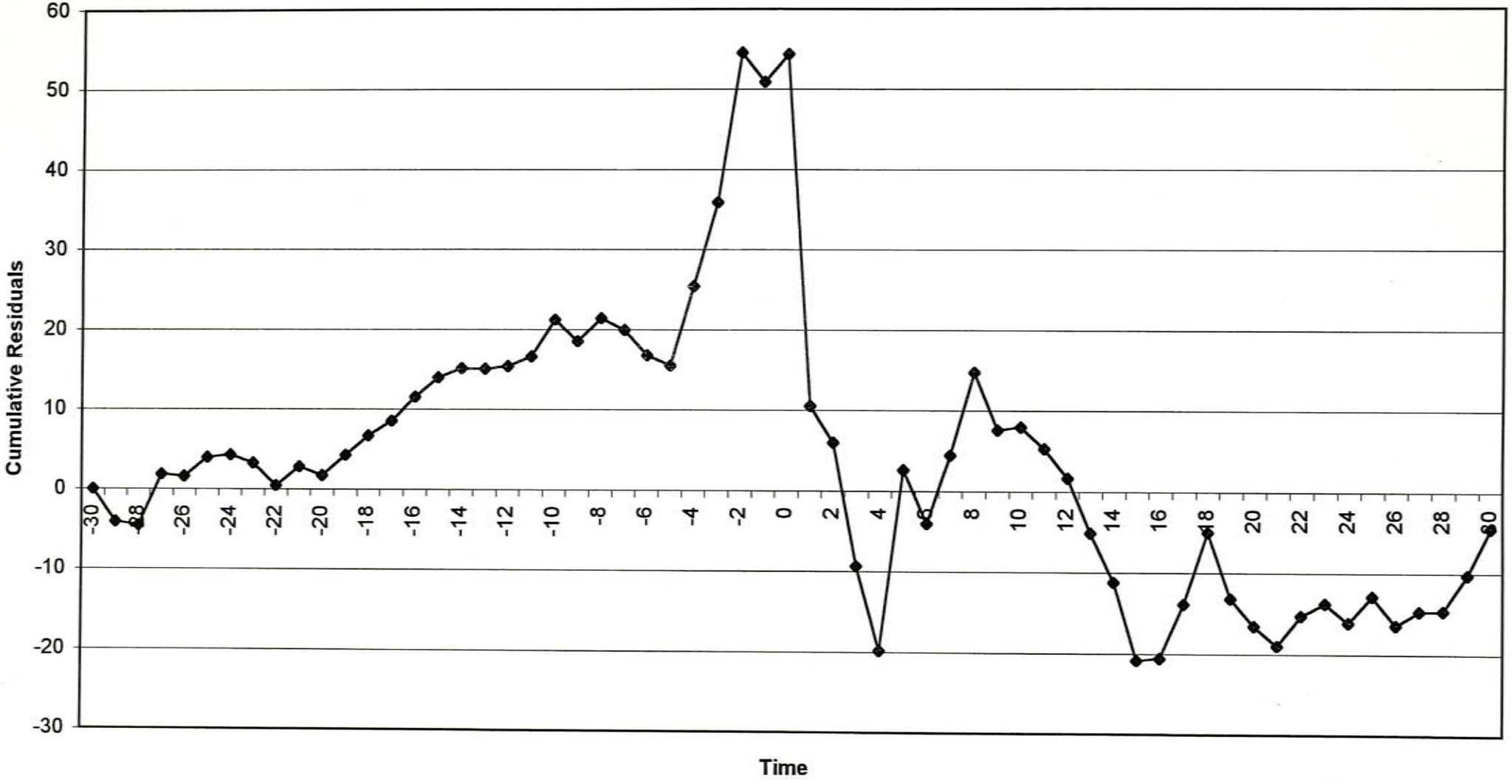
Graph of Cheung Kong (Holdings) Ltd
Cumulative Residuals against Time



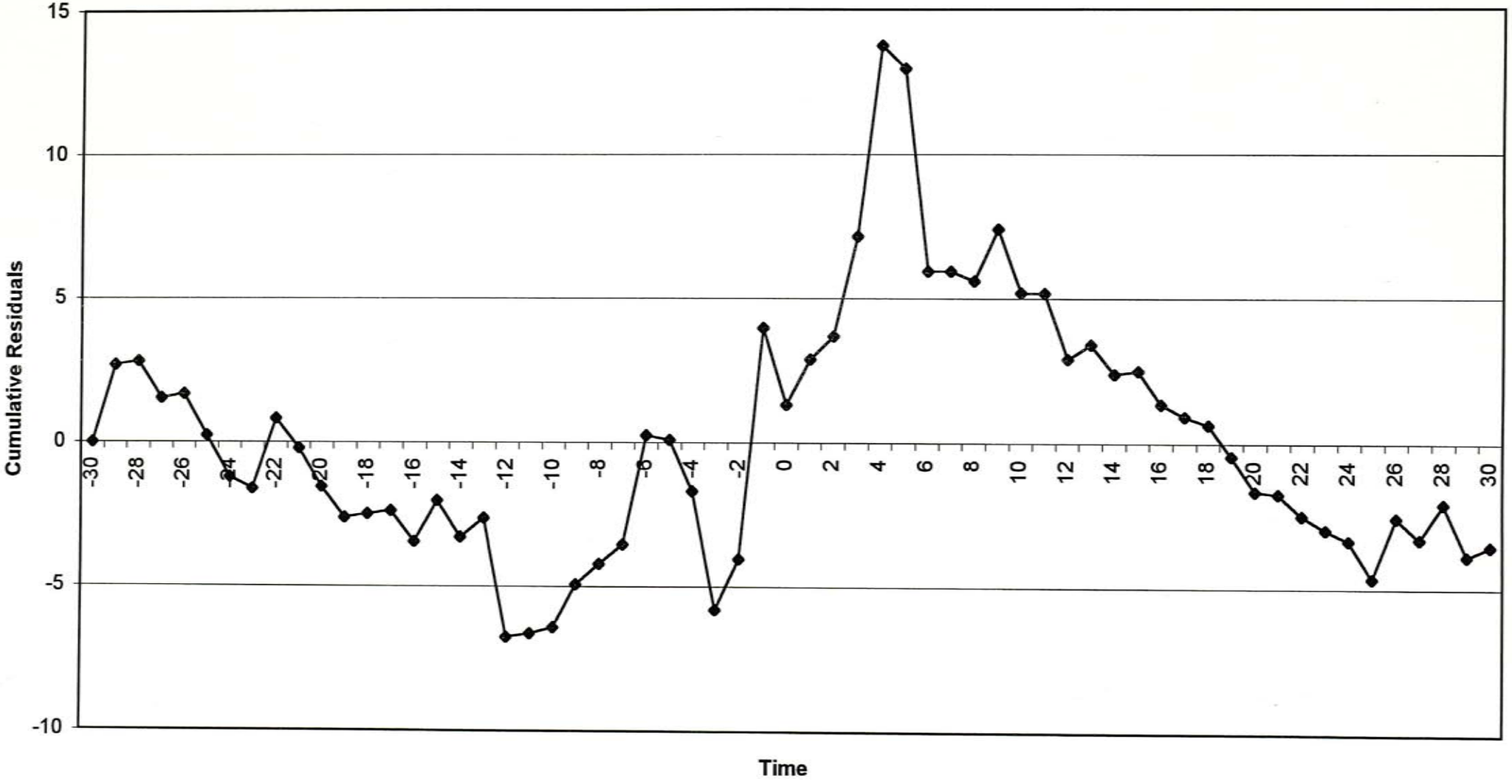
Graph of China Resources Enterprises
Cumulative Residuals against Time



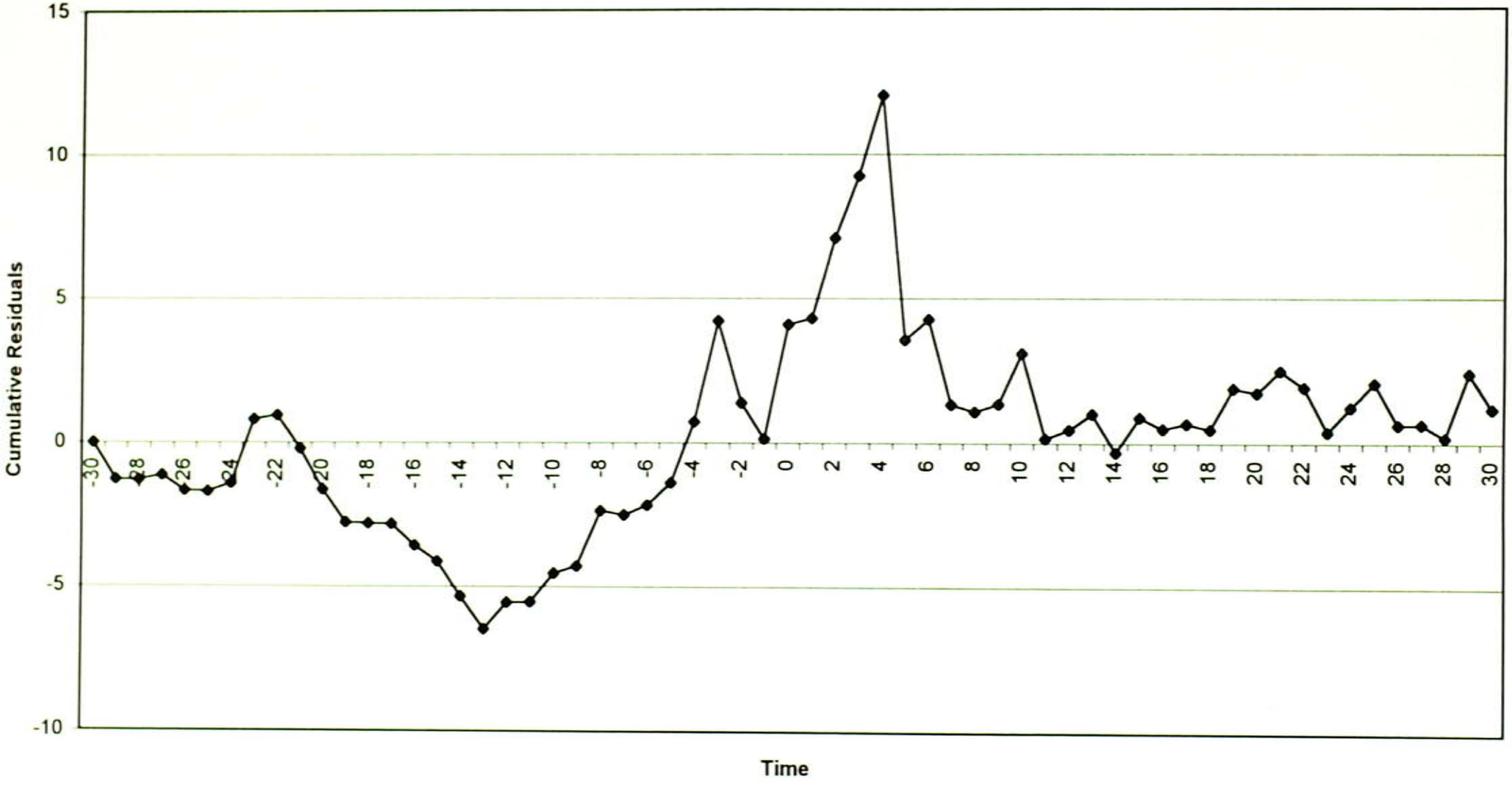
Graph of Cheung Kong Infrastructure
Cumulative Residuals against Time



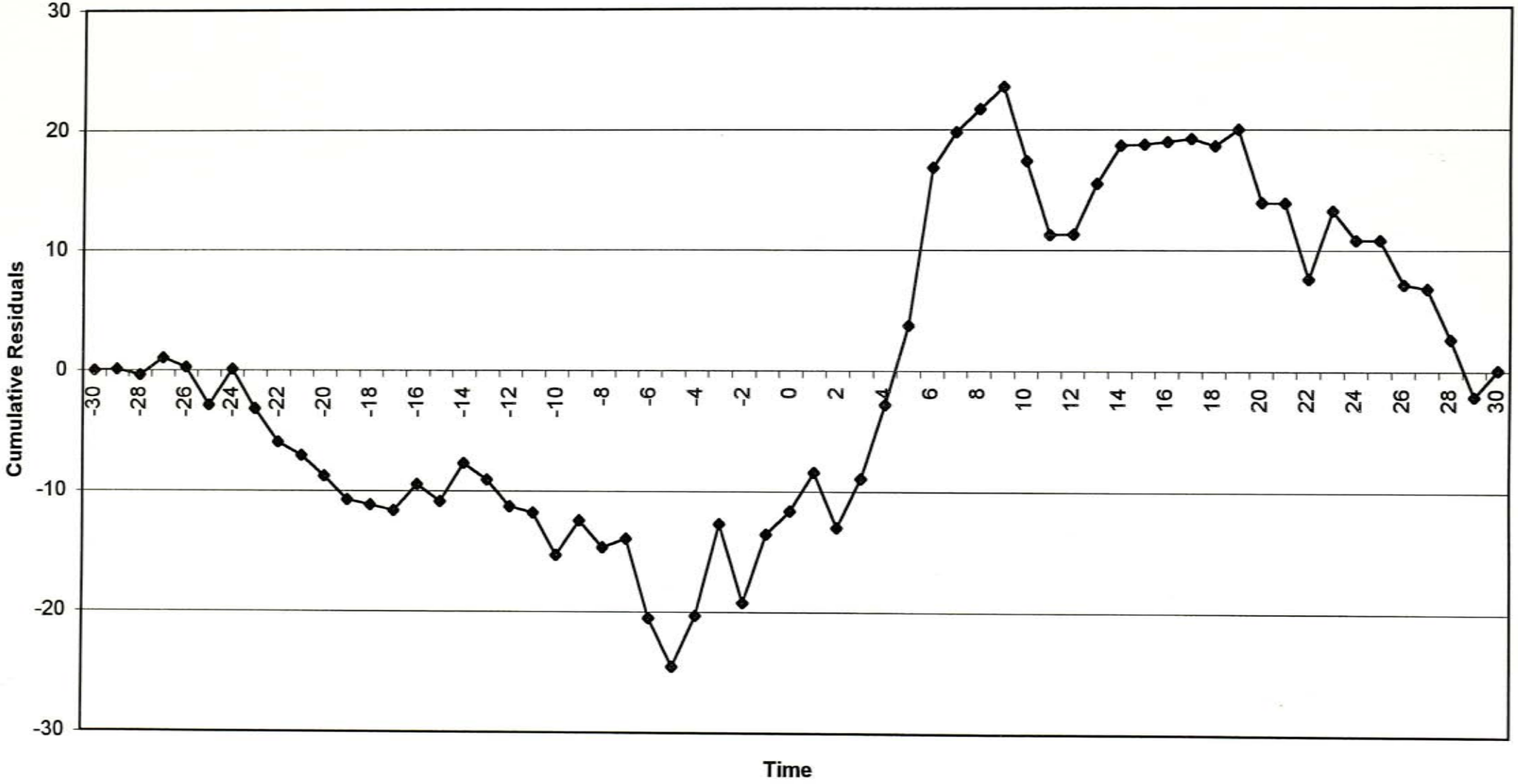
Graph of Citic Pacific Ltd
Cumulative Residuals against Time



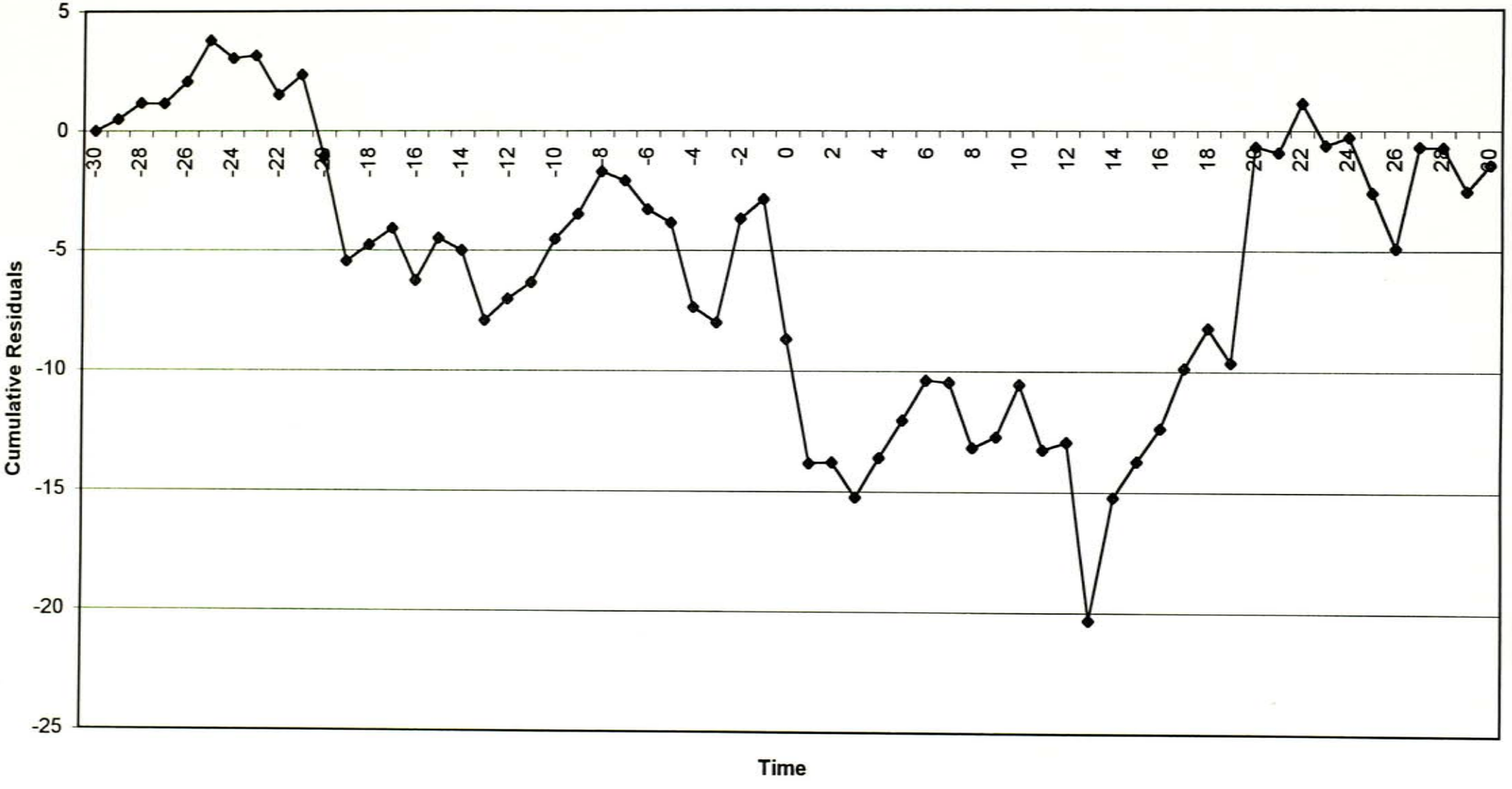
Graph of CLP Holdings Ltd
Cumulative Residuals against Time



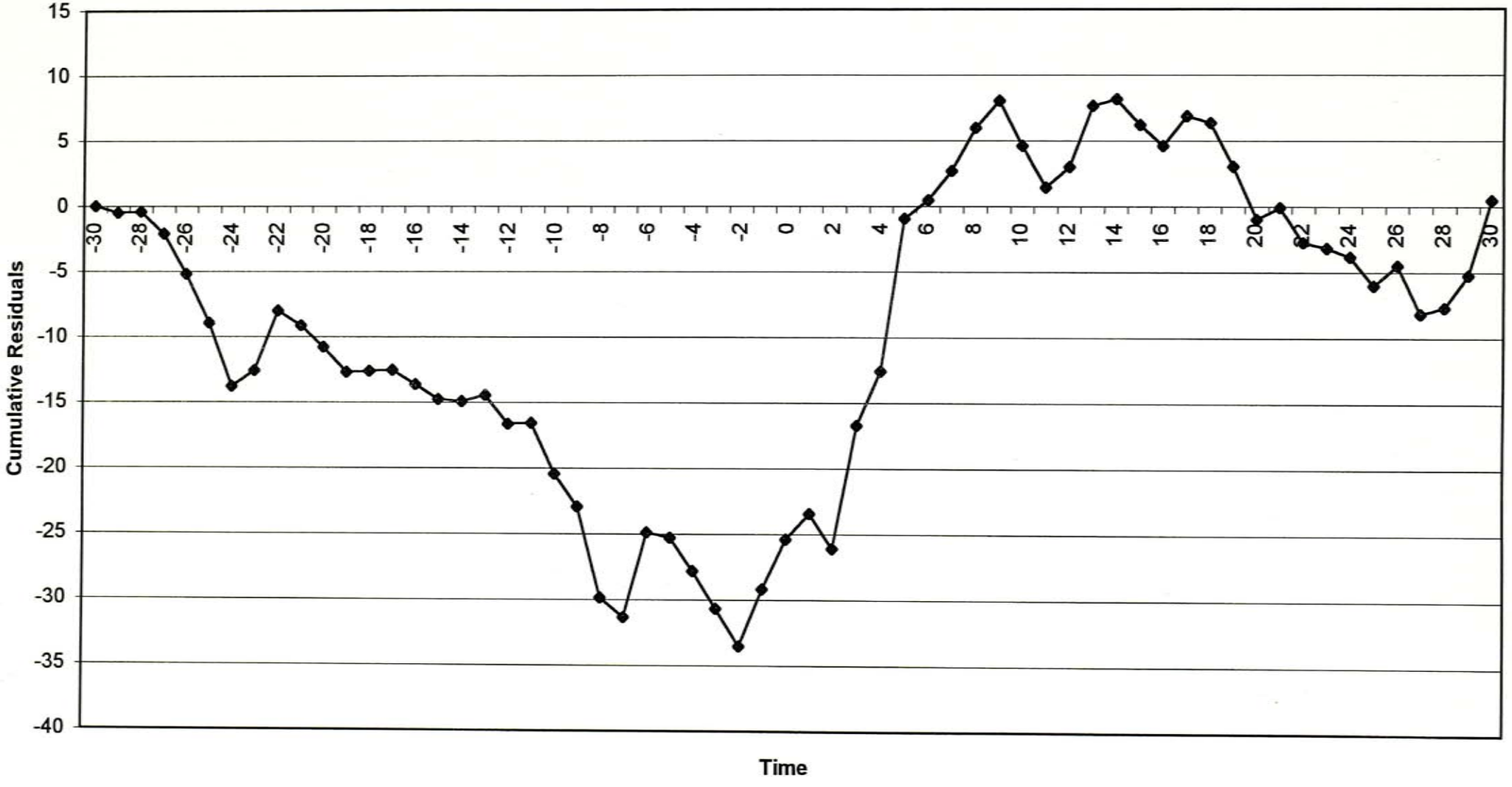
Graph of First Pacific Co Ltd
Cumulative Residuals against Time



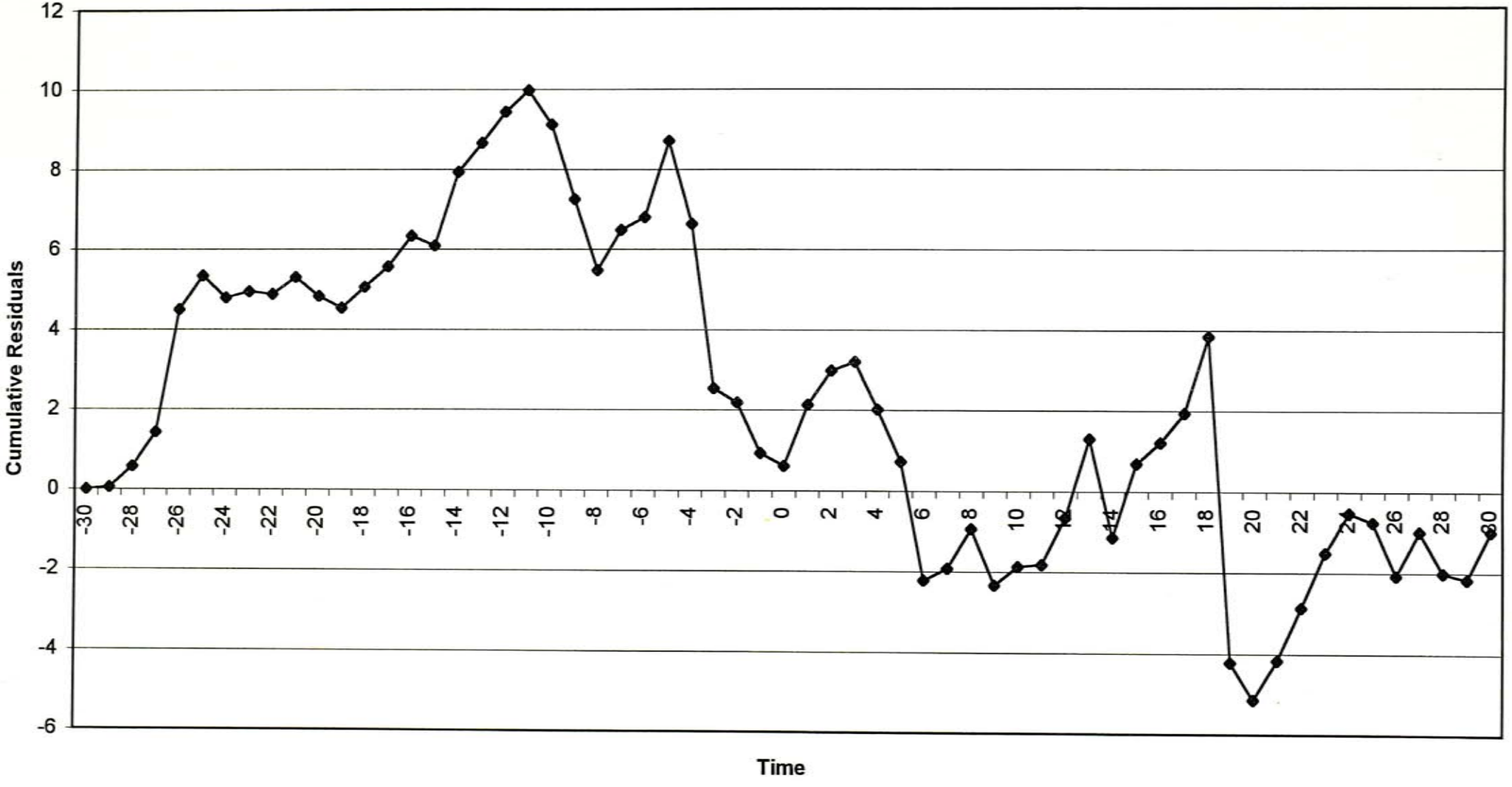
Graph of Great Eagle Holdings
Cumulative Residuals against Time



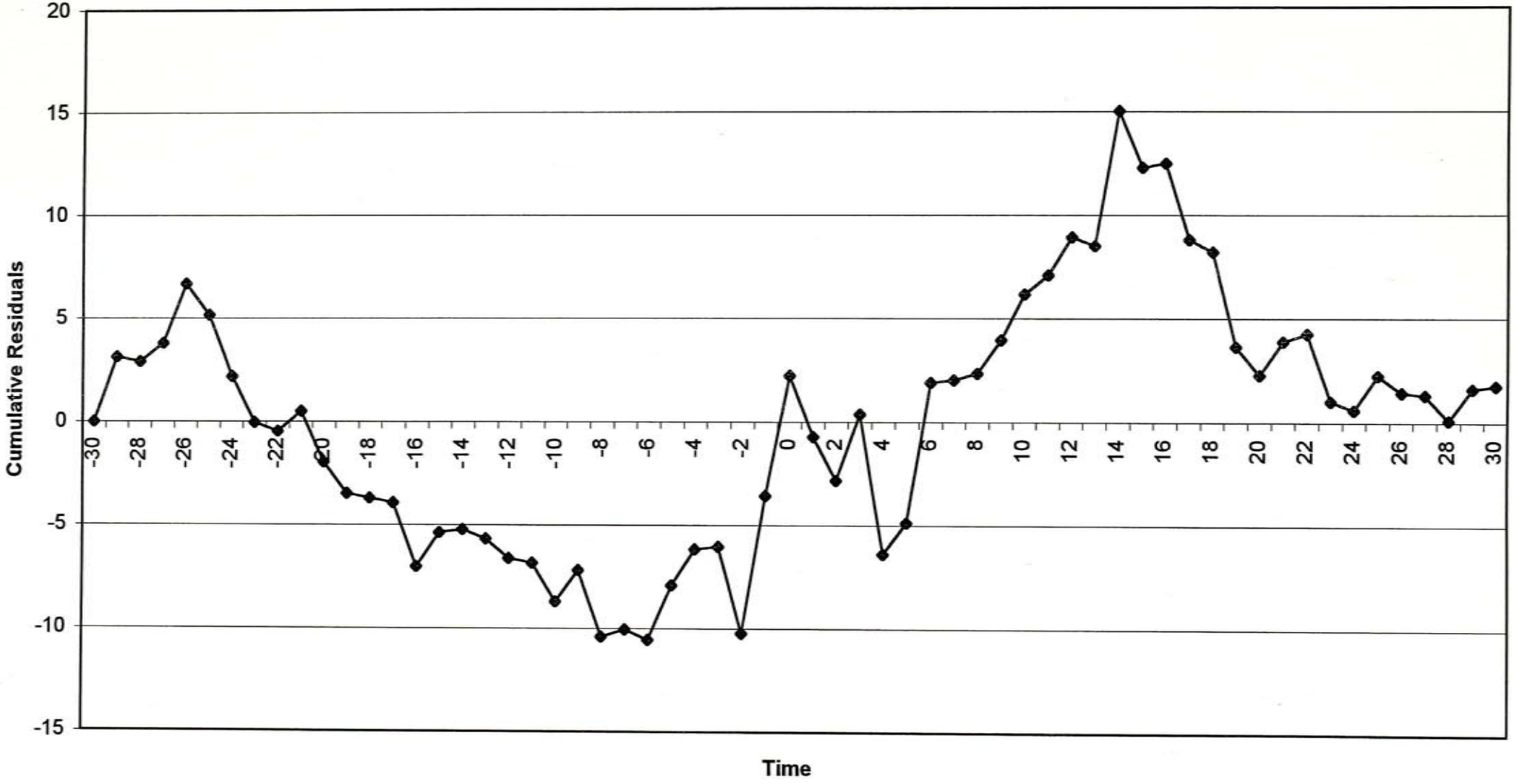
Graph of Guangdong Investment Ltd
Cumulative Residuals against Time



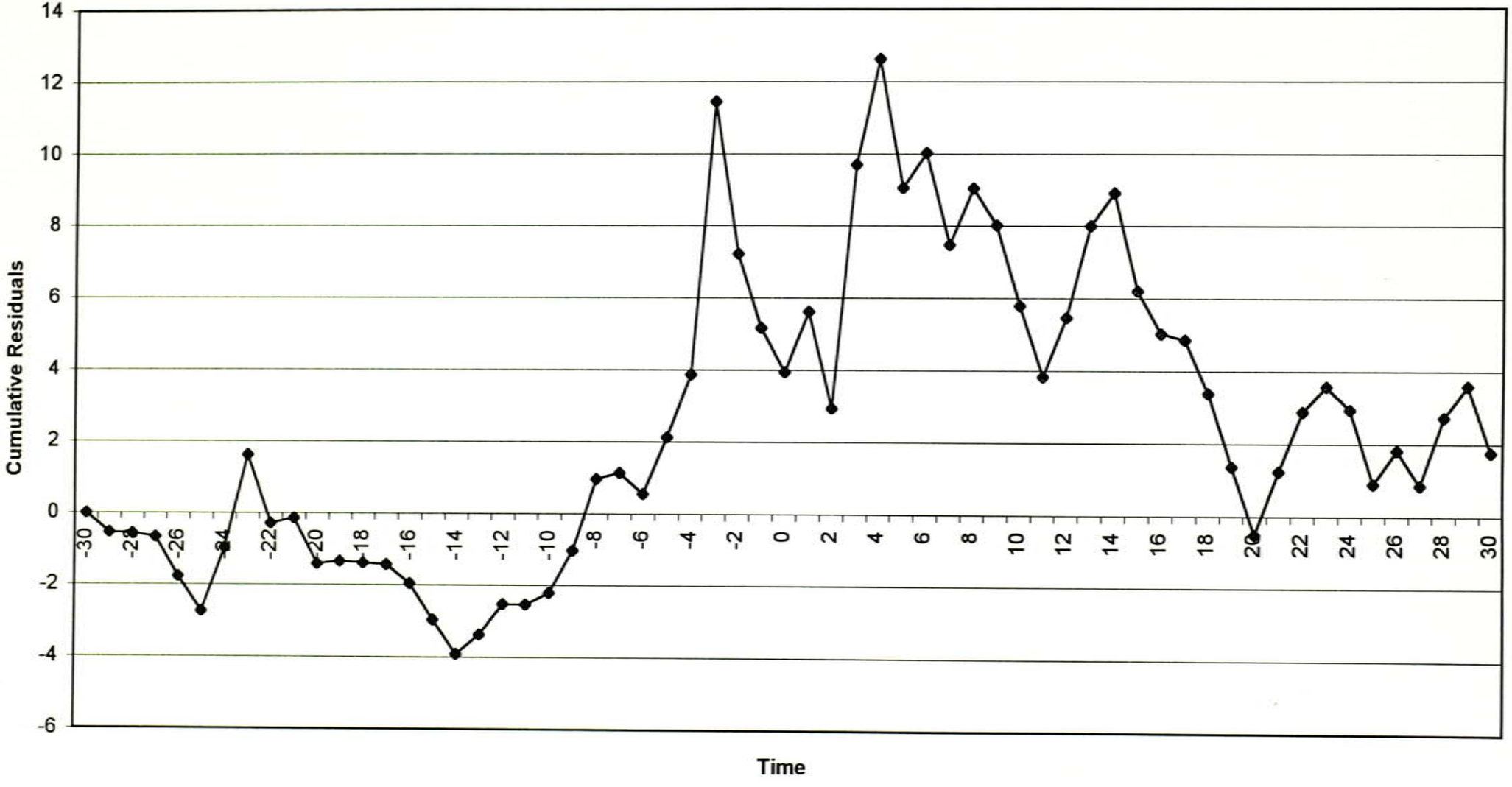
Graph of Henderson Land Development
Cumulative Residuals against Time



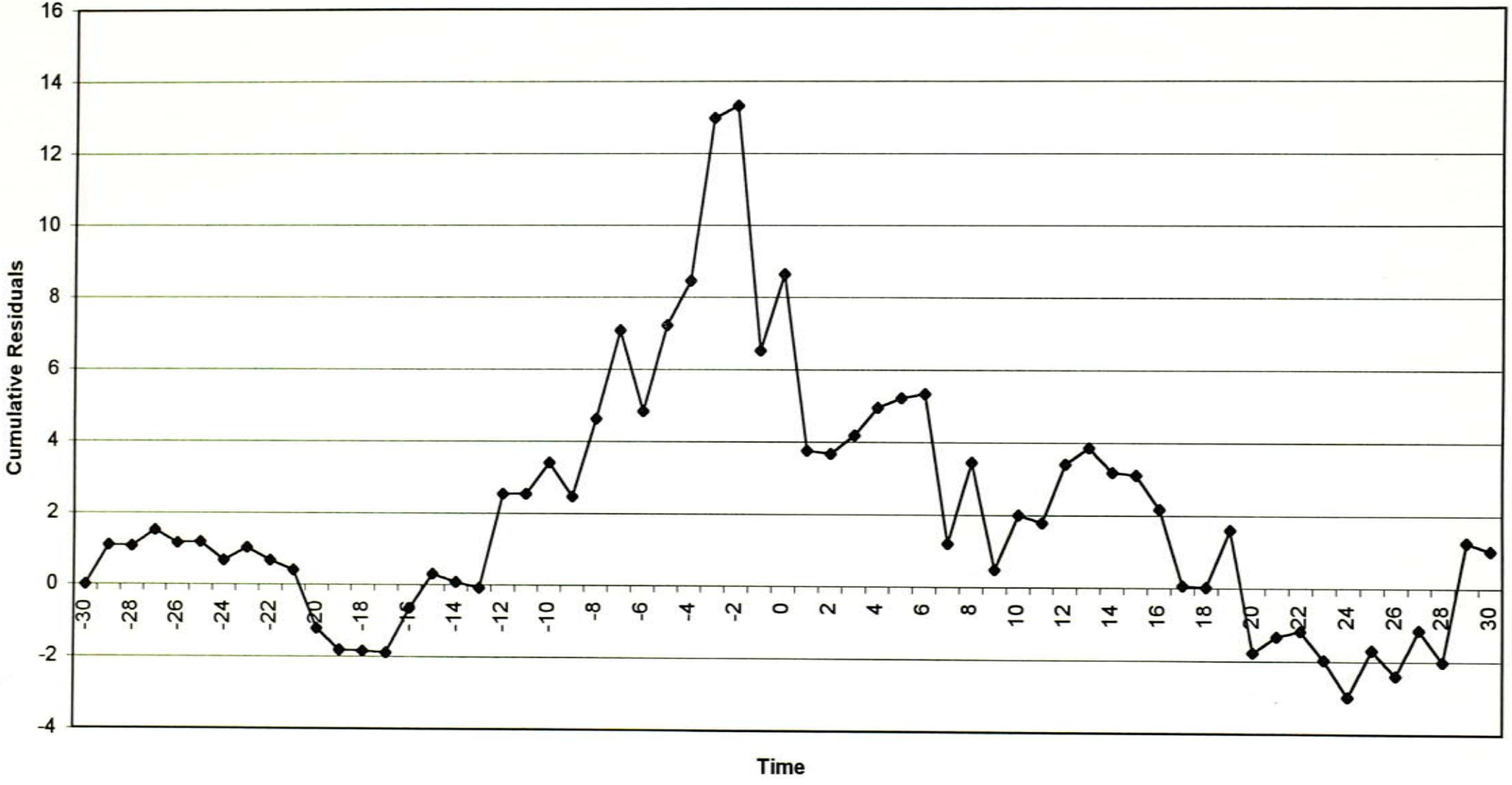
Graph of Henderson Investment
Cumulative Residuals against Time



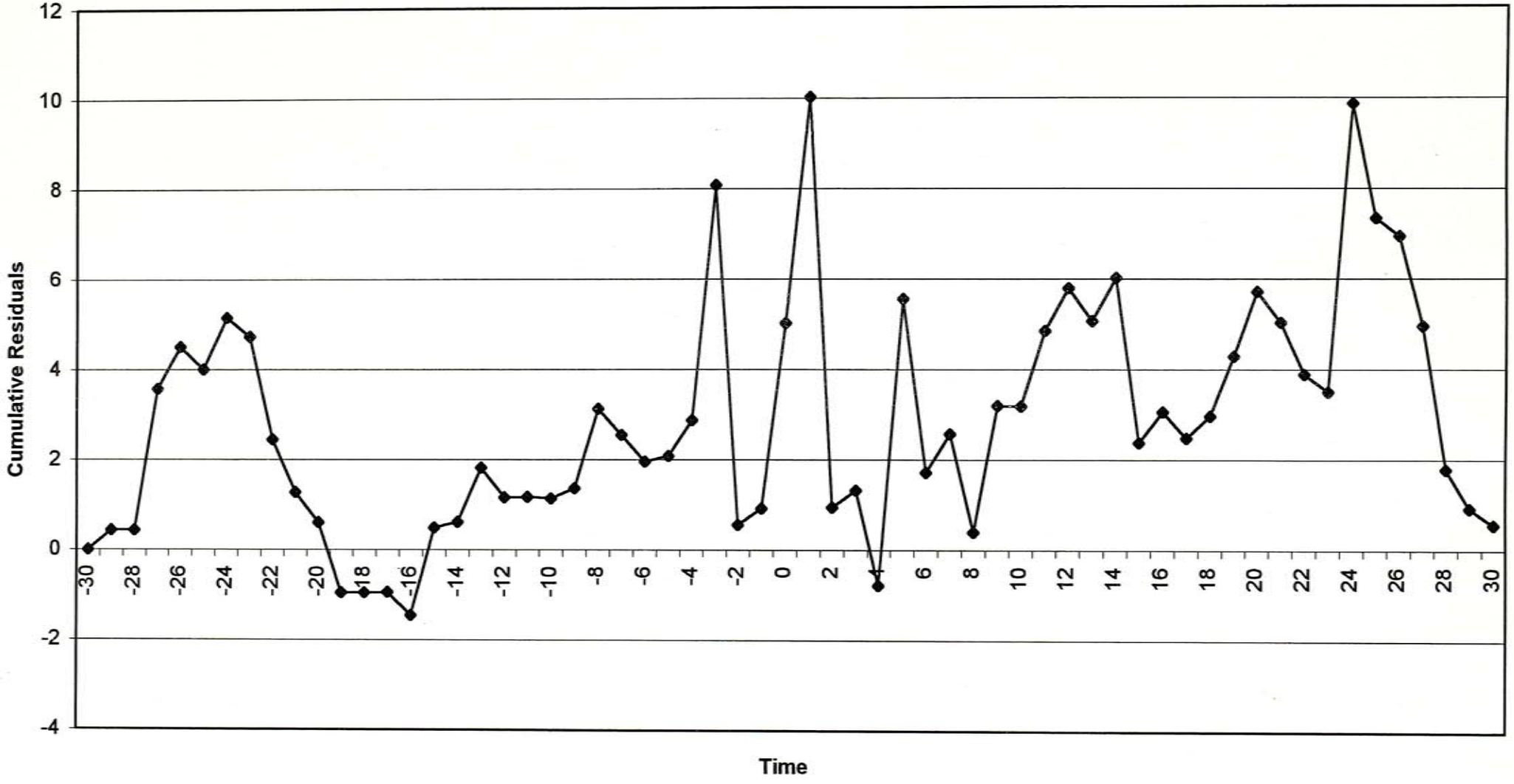
Graph of HK & China Gas
Cumulative Residuals against Time



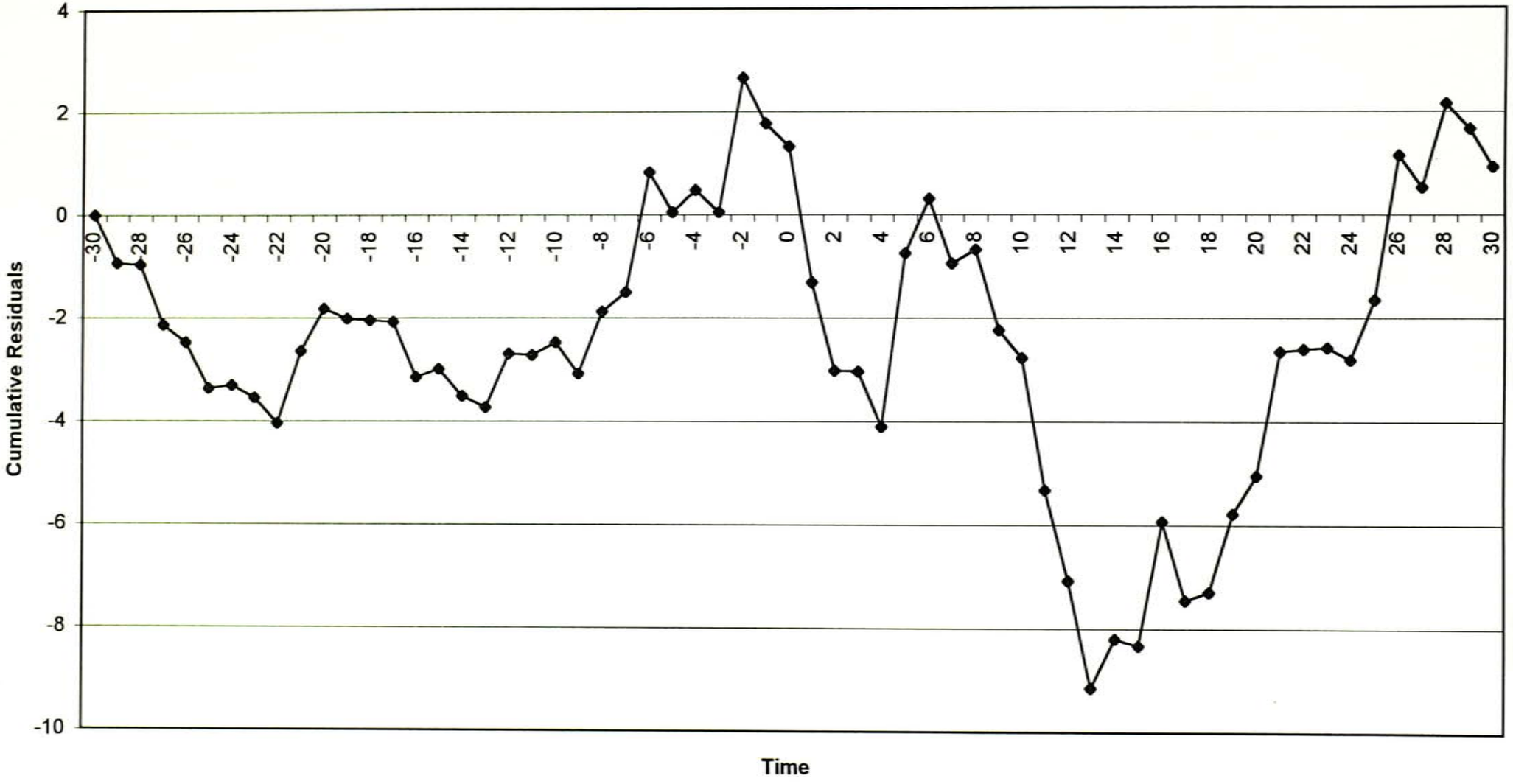
Graph of HK Electric Holdings
Cumulative Residuals against Time



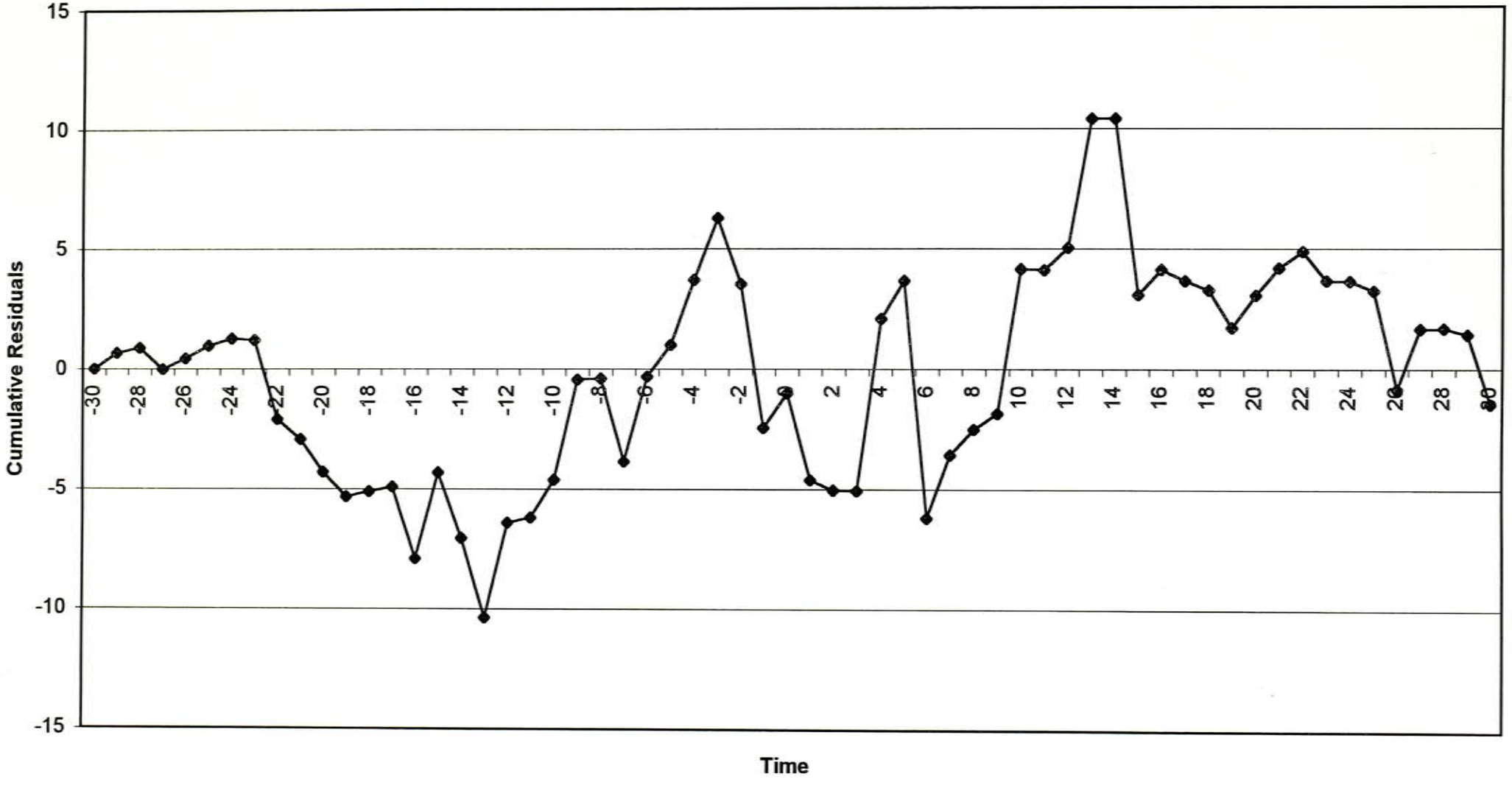
Graph of Hang Lung Development
Cumulative Residuals against Time



Graph of Hang Seng Bank
Cumulative Residuals against Time



Graph of HK & Shanghai Hotels
Cumulative Residuals against Time



Graph of Hopewell Holdings
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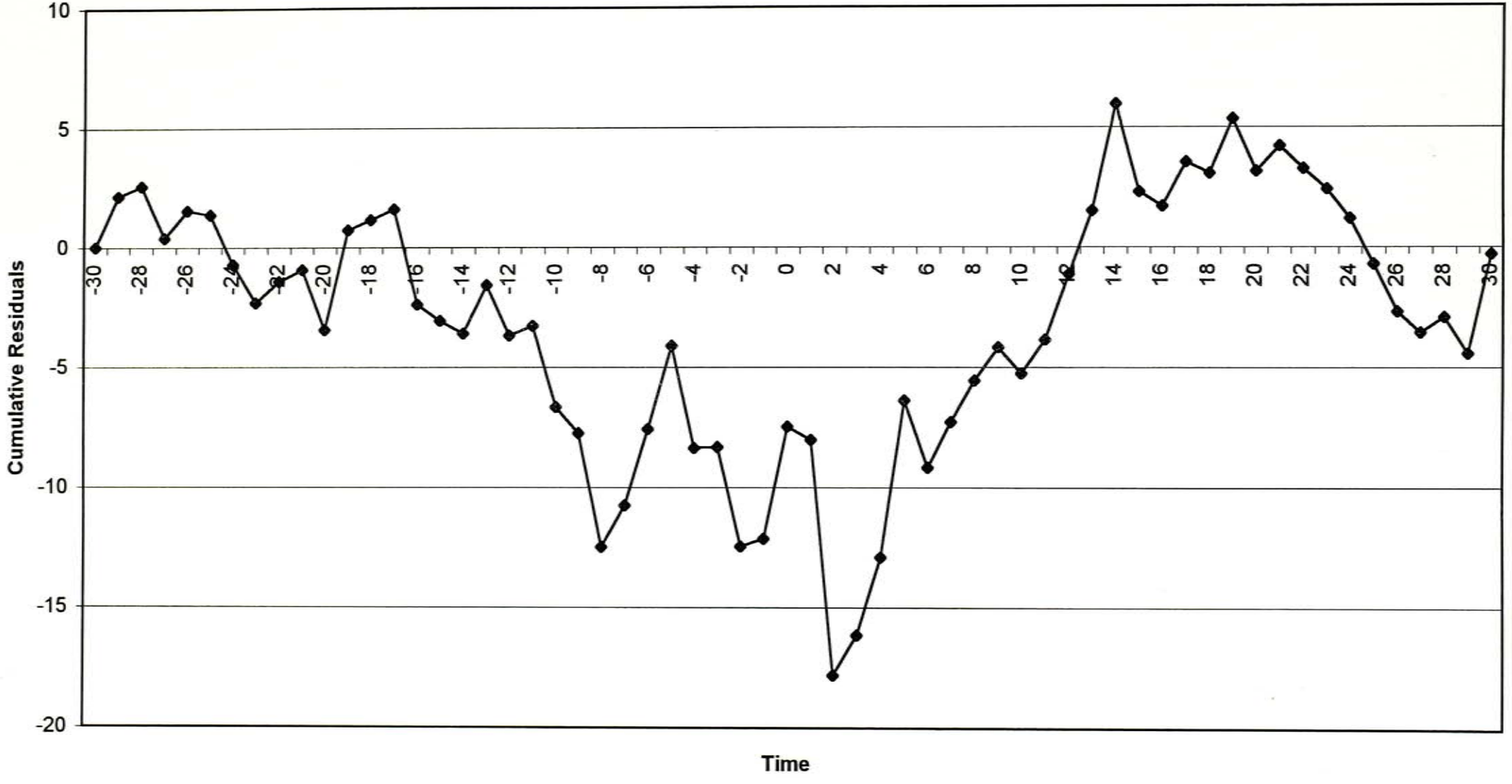
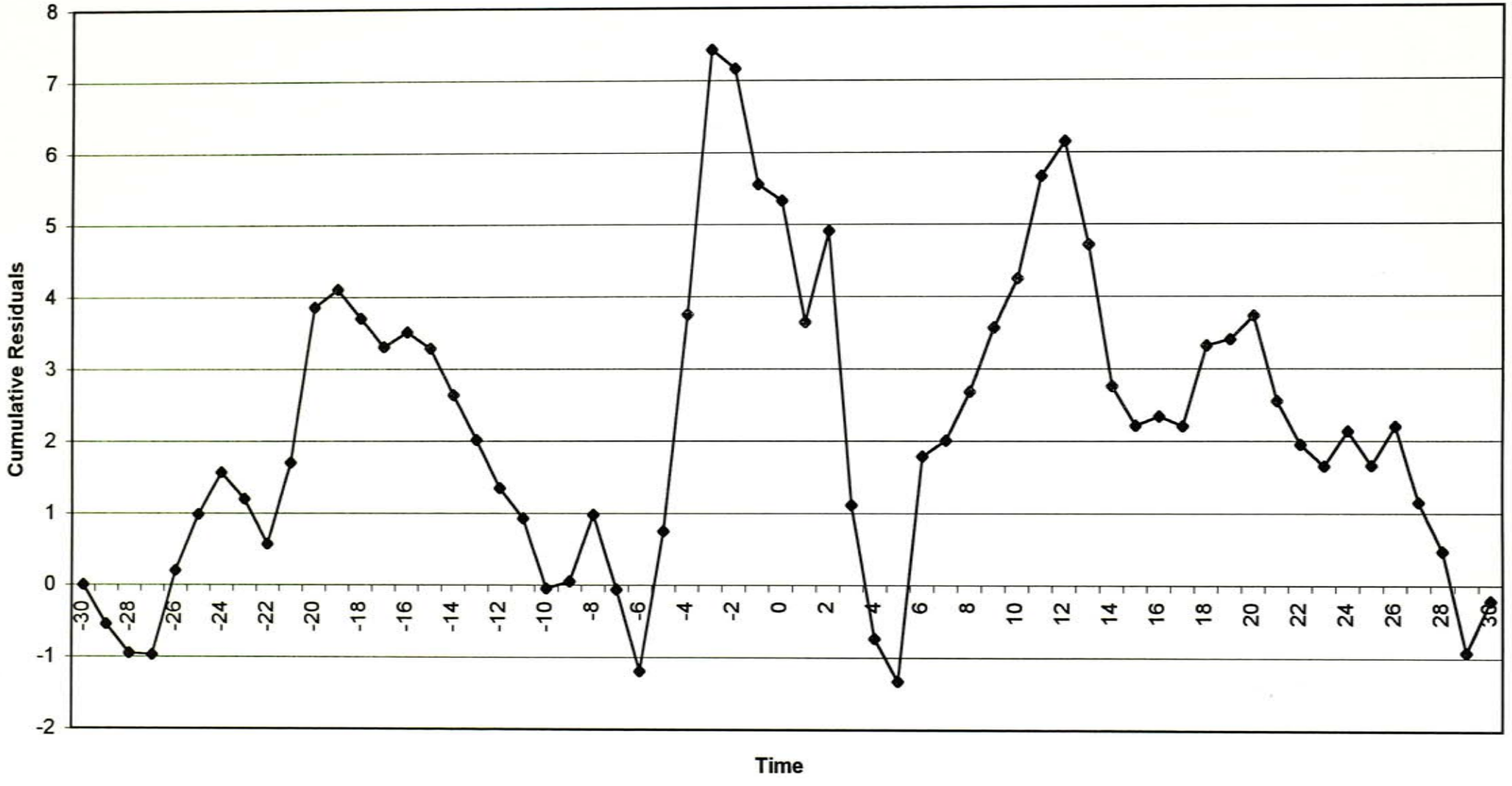
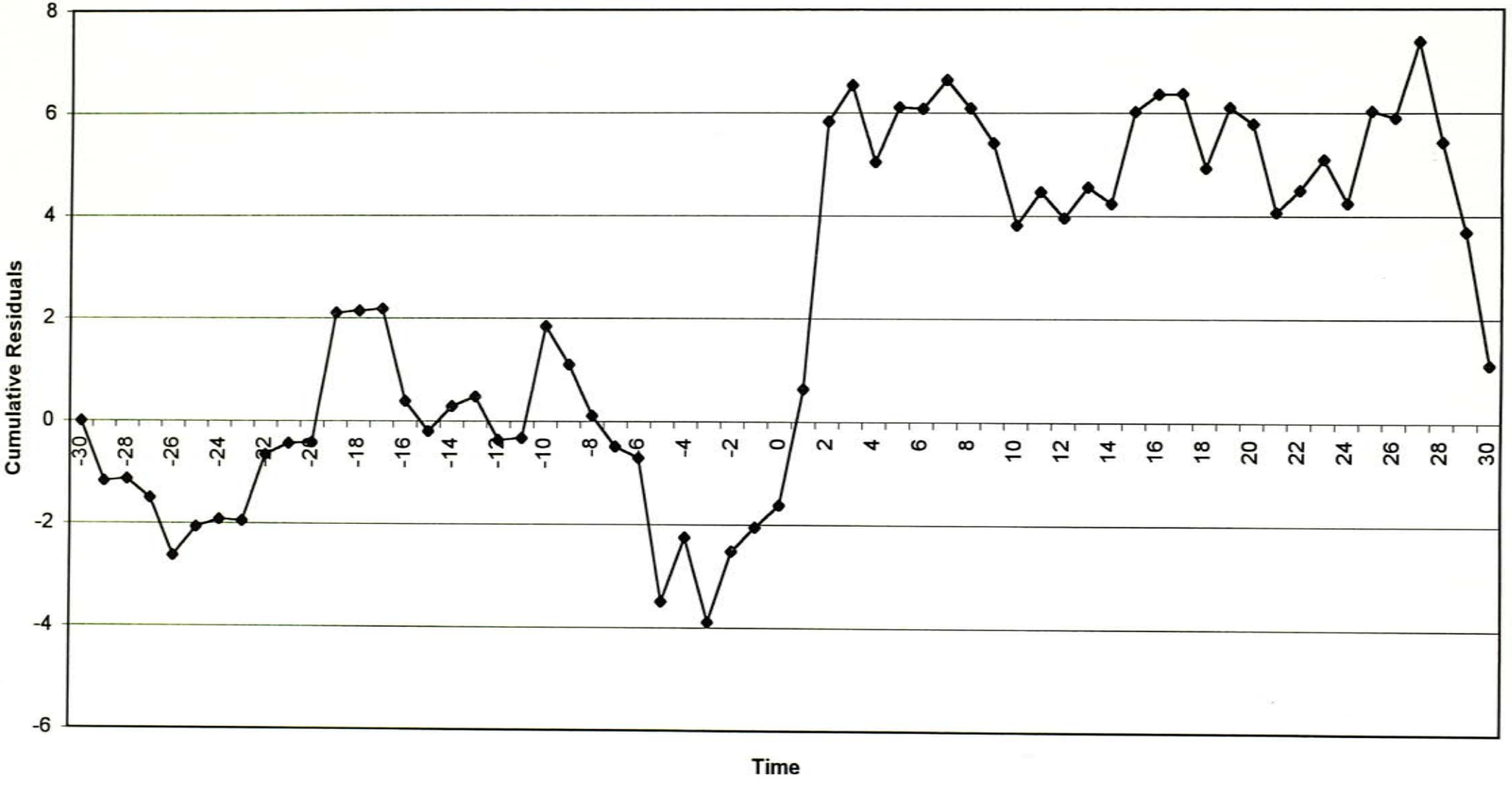


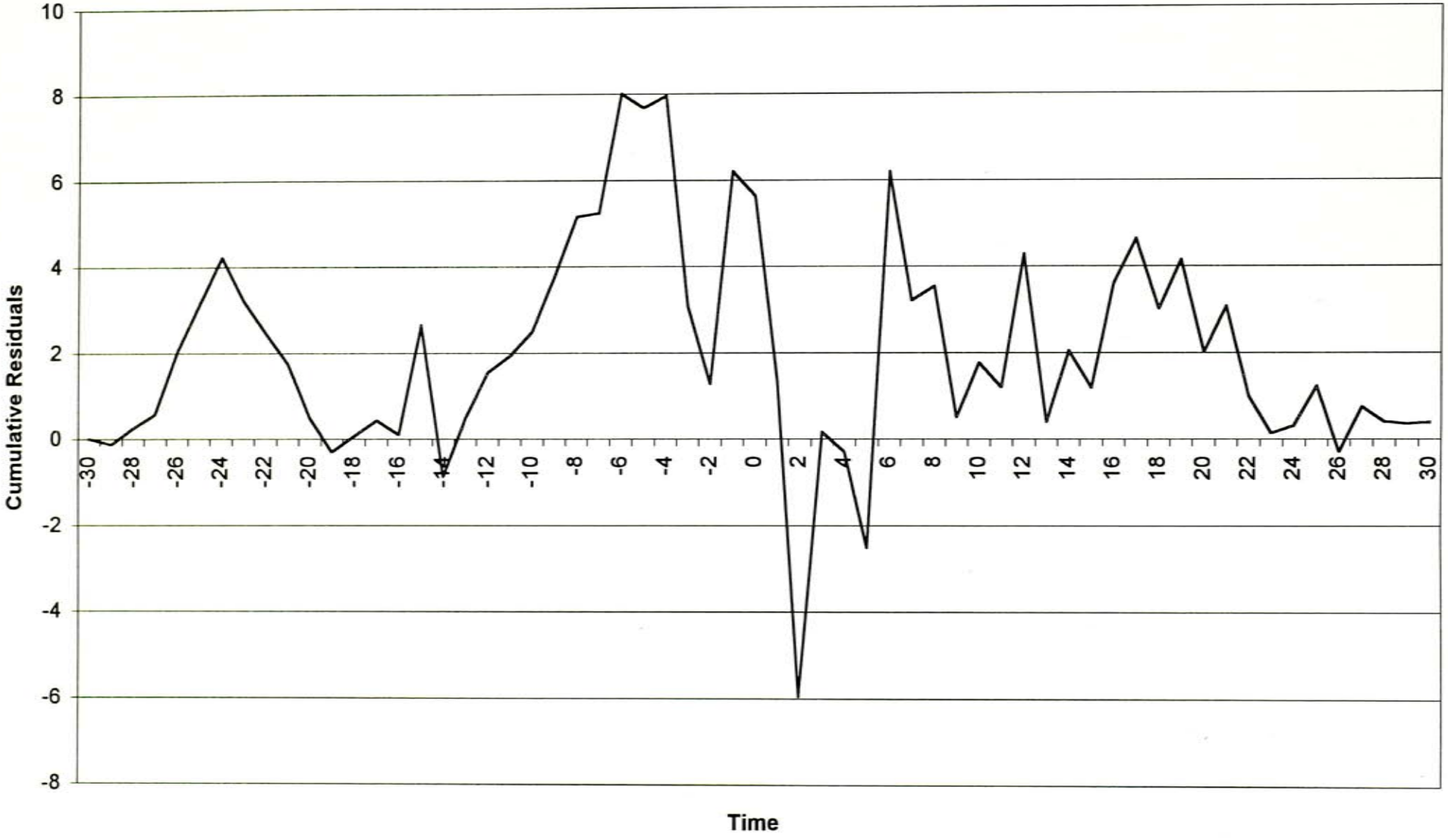
Graph of HSBC Holdings
Cumulative Residuals against Time



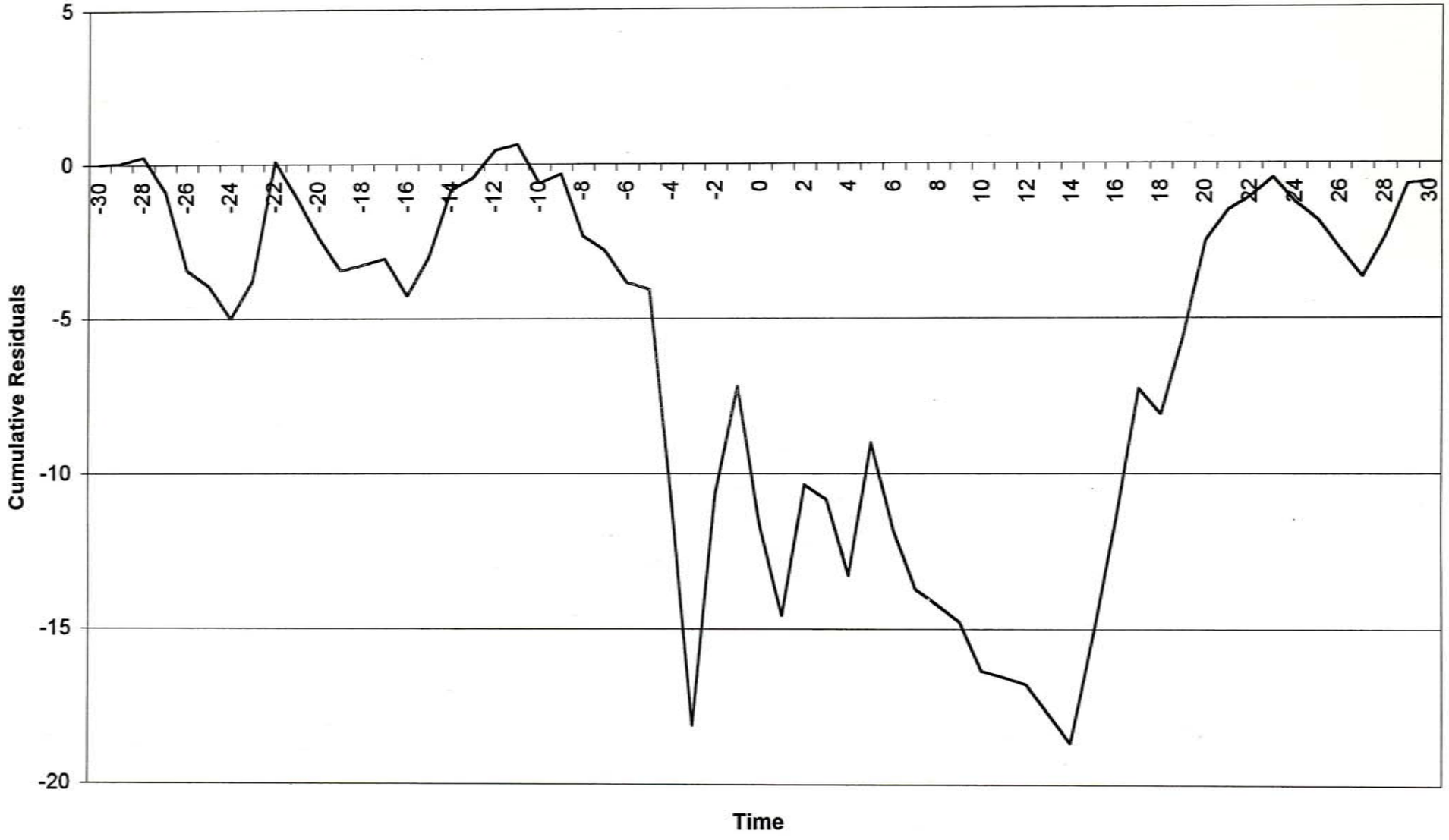
Graph of Hutchison Whampoa Ltd
Cumulative Residuals against Time



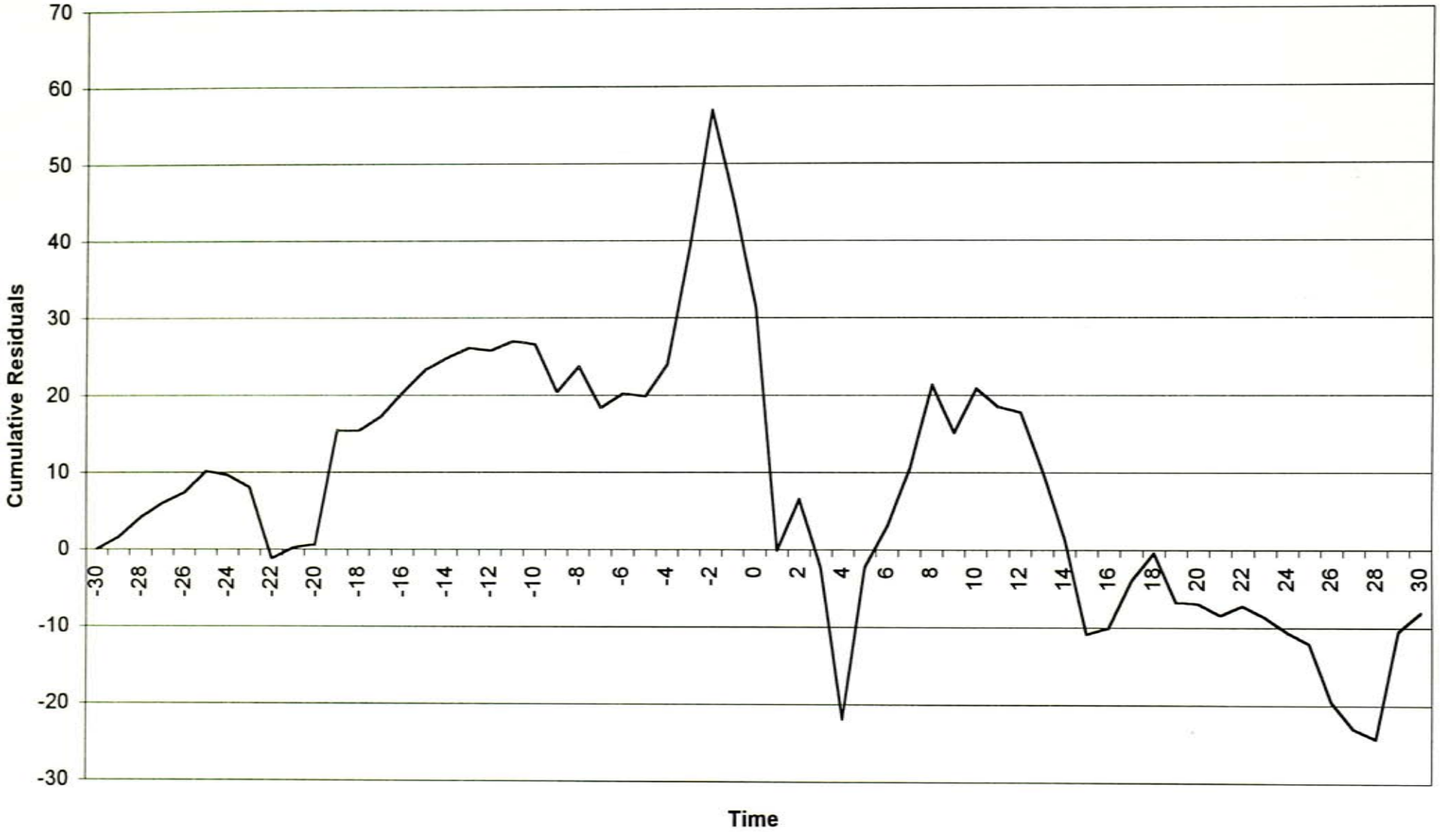
Graph of Hysan Development
Cumulative Residuals against Time



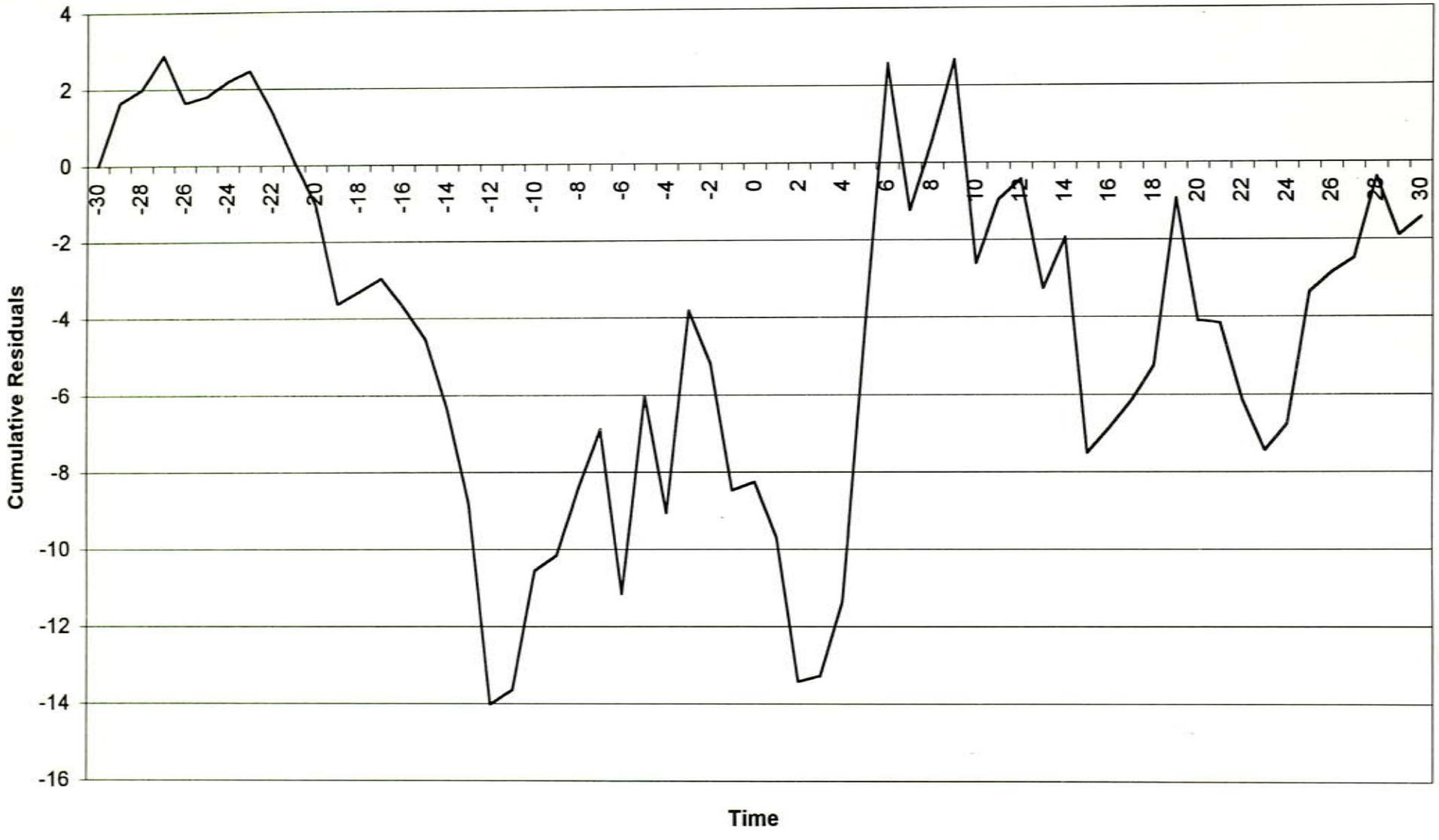
Graph of New World Development Co Ltd
Cumulative Residuals against Time



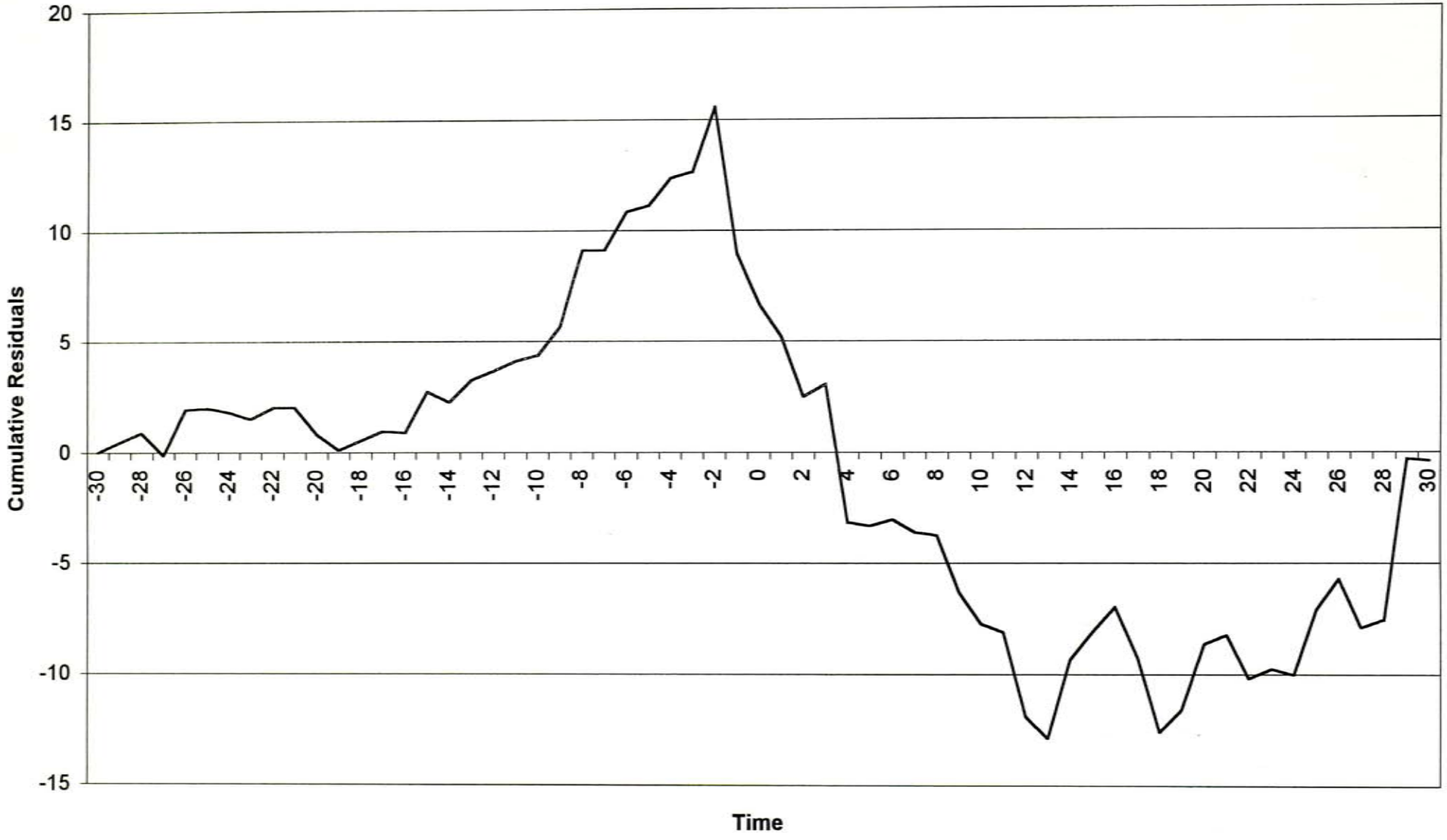
Graph of Shanghai Industrials Investment
Cumulative Residuals against Time



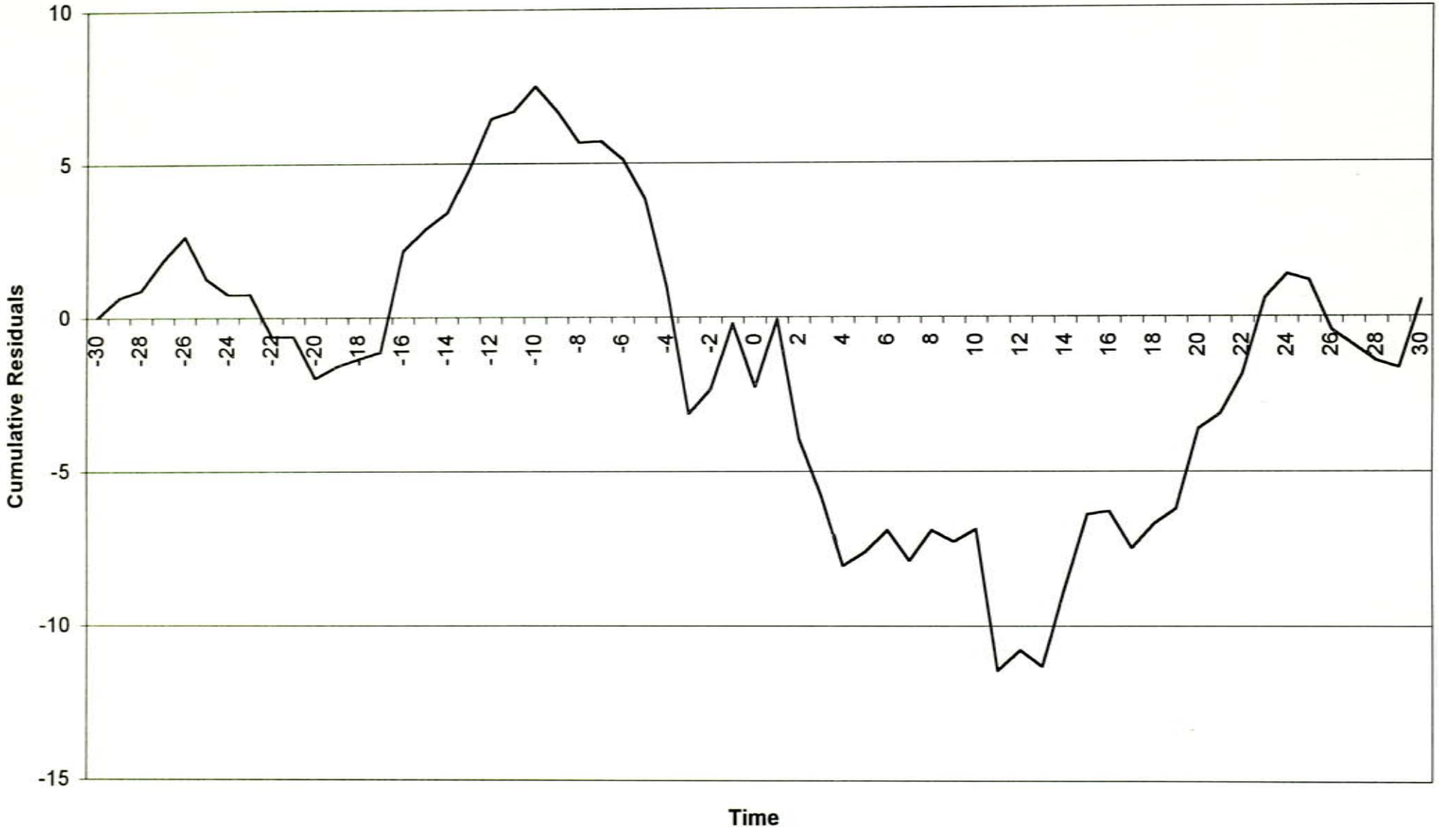
Graph of Shangri-La Asia
Cumulative Residuals against Time



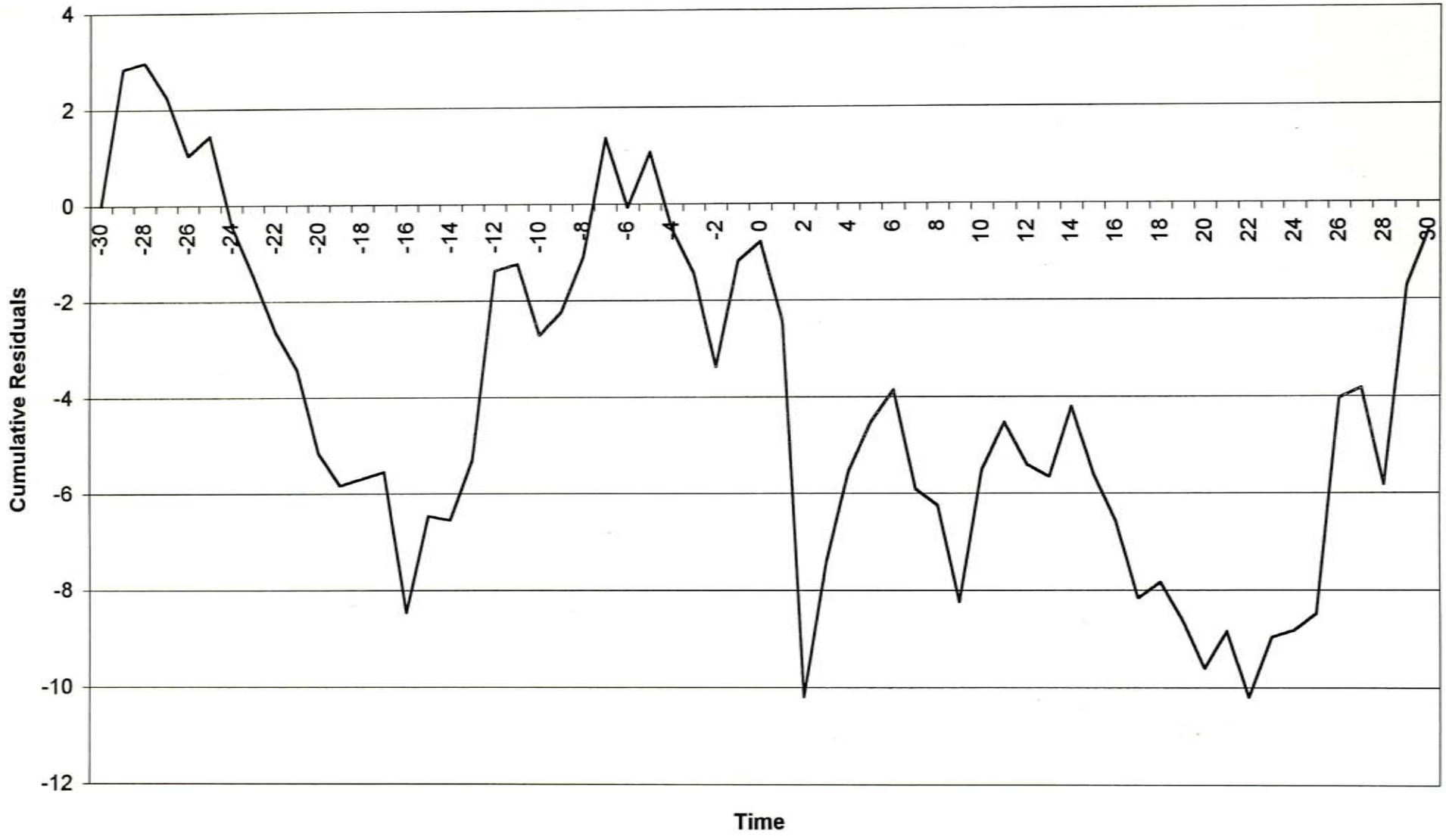
Graph of Sino Land
Cumulative Residuals against Time



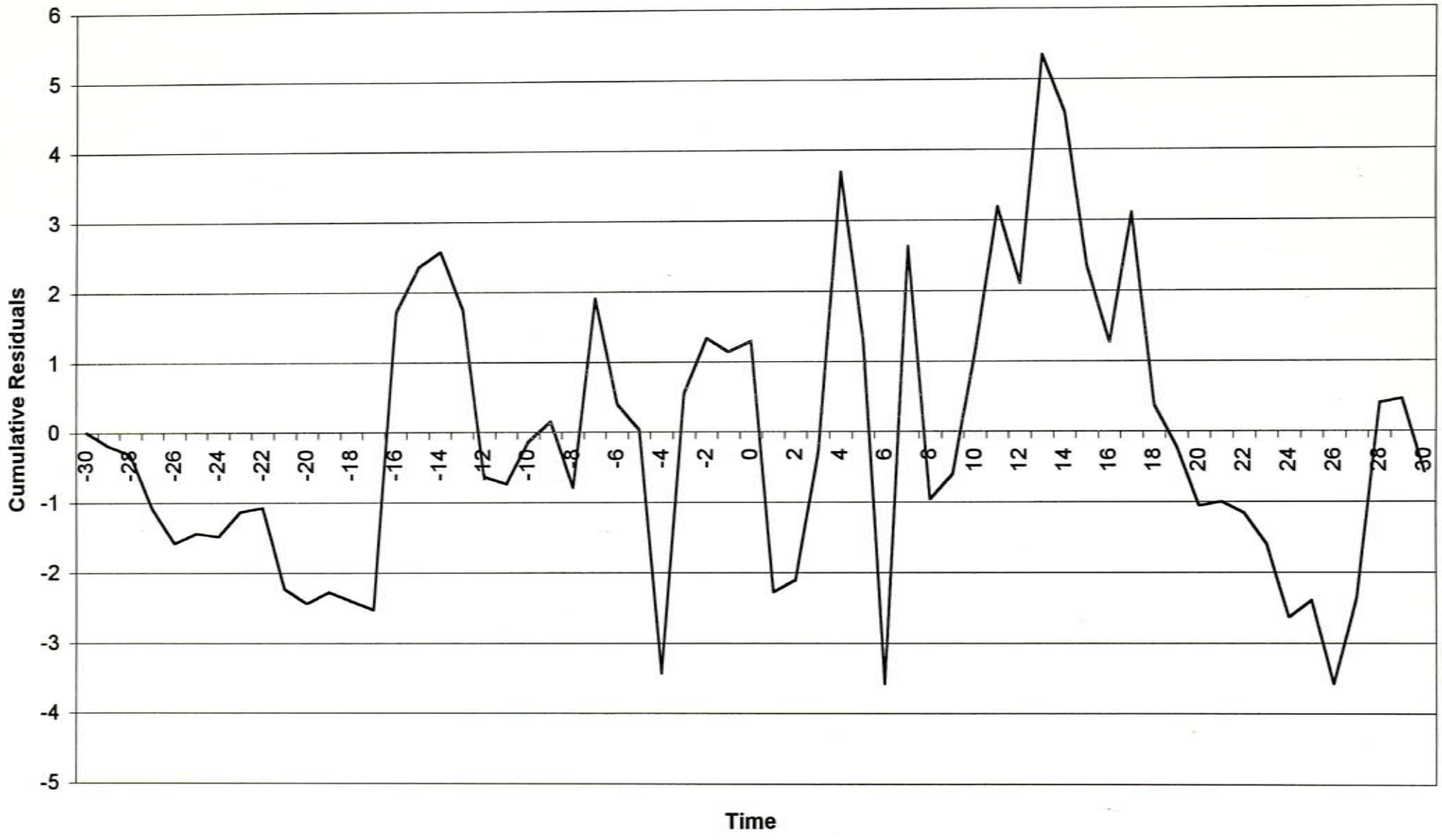
Graph of Sun Hung Kai Properties Ltd
Cumulative Residuals against Time



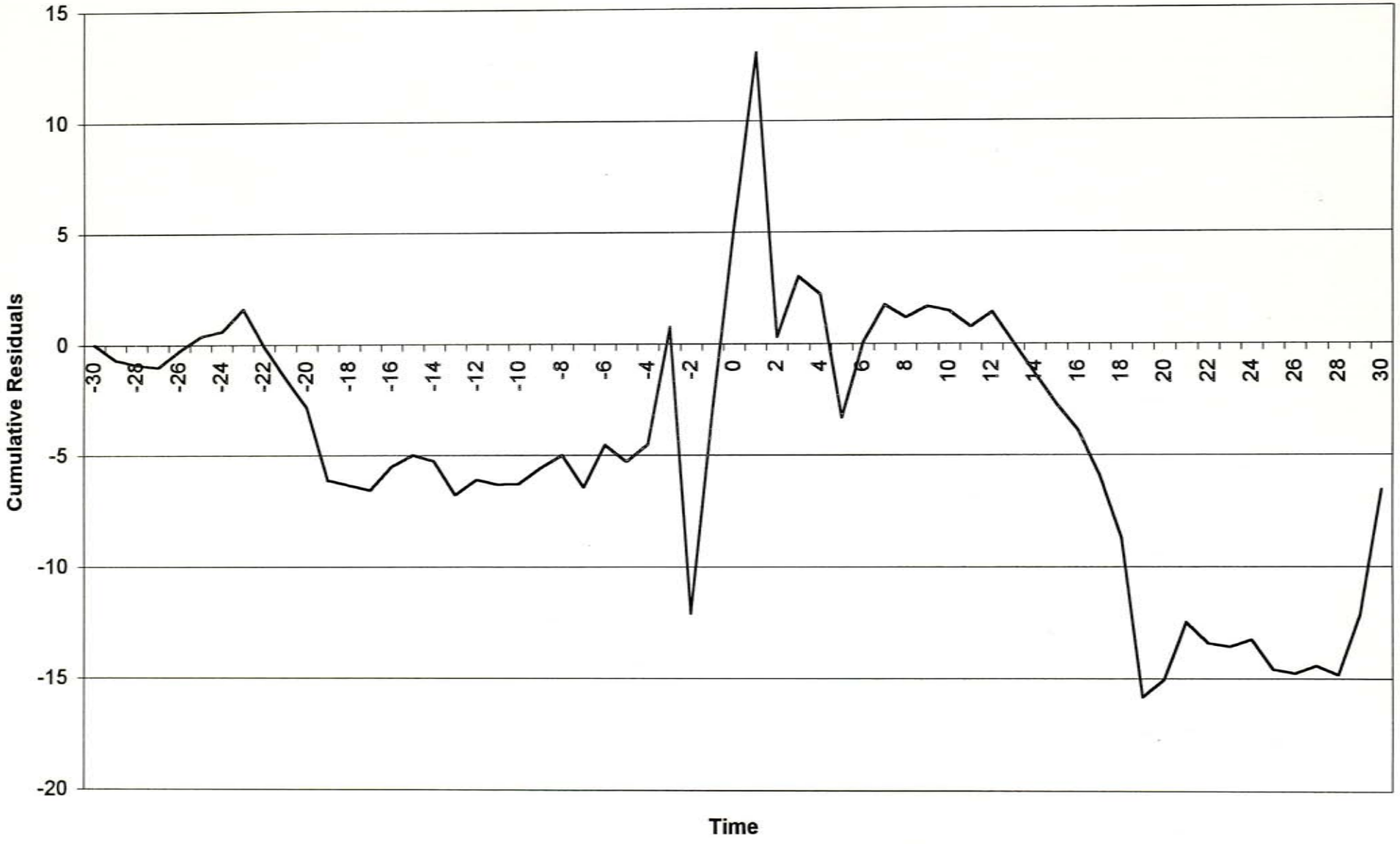
Graph of Swire Pacific
Cumulative Residuals against Time



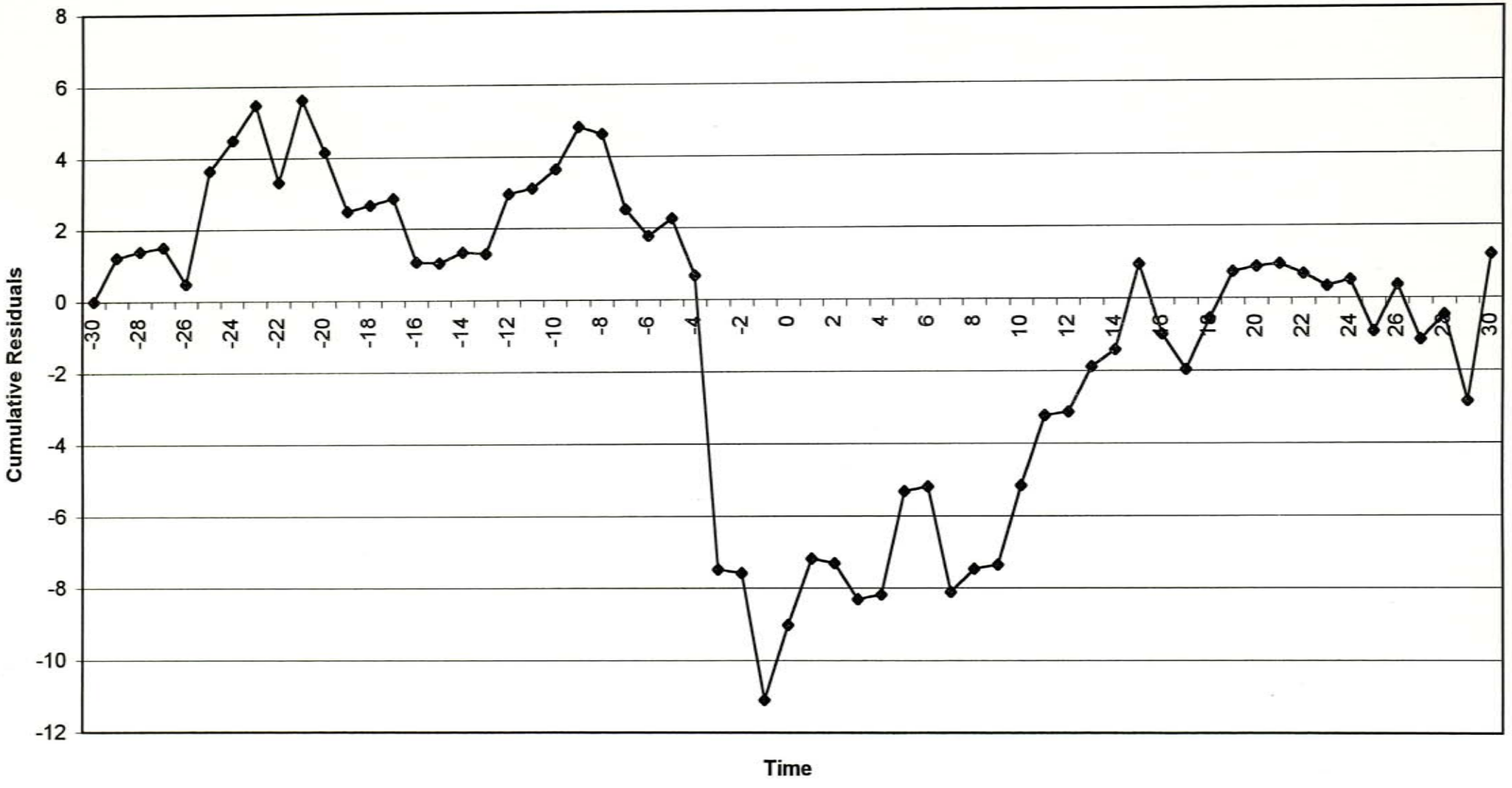
Graph of Hong Kong Telecommunication
Cumulative Residuals against Time



Graph of Television Broadcasts Ltd
Cumulative Residuals against Time



Graph of Wharf Holdings
Cumulative Residuals against Time



Graph of Wheelock & Co.
Cumulative Residuals against Time